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HARVARD BUSINESS REVIEW

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THE INDUSTRIAL RECONSTRUCTION OF FRANCE SINCE THE WAR[1]

By GERMAIN MARTIN

AT the close of the war, industry in the north and in the east of France, representing, in fact, 92% of the total French production of iron, 74% of the coal, 70% of the cotton, and 60% of the steel, had to be entirely reconstructed. Rapid reconstruction was necessary if France wished to start anew to be self-sufficient and to find in an exportation policy the indispensable means for adjusting the balance of international trade.

A transformation and coordination of the industries and plants created during the war to serve the needs of national defense was likewise essential. A number of the new plants constructed without regard to cost or the possibilities of furnishing raw materials proved after the war to be unable to withstand the competitive struggle against national and international competition. An elimination of the less efficient enterprises was inevitable. Moreover, the productive capacity of French industry had been increased by the addition of the plants of Alsace-Lorraine and of the Saar.

In 1925 France had, in fact, recovered her pre-war capacity for production and commerce. This effort at industrial reconstruction has been accomplished in the midst of financial circumstances peculiarly difficult for the satisfactory progress of industry. The fluctuations of exchange and their consequences, the increasing rate of taxes bearing upon industrial activity, the continual readjustment of wages, are among the elements which have militated against the establishment of a stable cost and against the elaboration of long-range industrial programs. But today, France would be able, if markets were not lacking, to increase this productive capacity in the most important branches.

By what steps has industrial France accomplished this work of industrial reconstruction? What have been the re-

[1] Translated from the French.

sults? These are the questions that we are to examine in this study.

1. The Process of Reconstruction

The steps by which industrial reconstruction has been brought about are the following:

1. The development of a closer relationship between science and industry
2. More scientific organization of plants, and the introduction of standardization and specialization
3. The formation of large economic combinations of employers
4. Continued economic activity of industrial France, and the moderation of workers' demands
5. French thrift and the increasing subscription to industrial issues

1. The Coordination of Science and Industry

The movement toward closer connection between science and industry received during the war a powerful impulse which has continued since that time. The technique of manufacture has been perfected in metallurgical and chemical fields. In the phrase of M. Henry le Chatelier, "If scientific methods of work could be applied generally, the productive power of France would easily be doubled, and the ruin of the war soon effaced." That was also the idea developed at the same time by the American Federation of Labor in Atlantic City in June, 1919, expressed in the words, "Scientific research and its technical applications constitute one of the essential bases for the development of manufacturing, agricultural, mining, and other industries."

Of great assistance during and since the war has been the multiplication of industrial laboratories, both official and private. In metallurgy Henry Chatelier, mentioned above, and Guillet have studied the elasticity of metals, their resistance, the phenomena of heat treatment, as well as their alloys. The great metallurgical firms have often called upon specialists for the study of these questions. Among the new laboratories which have been created could be mentioned those of Ugine and of the Citröen plants. In the chemical industries participation of scientists in the work of industrial research is even greater. In this respect France has been much behind Germany, which country before the war had already established a close relationship between scientists and industrialists.

Furthermore, the state possesses certain official laboratories utilized only by the government departments; for example, the laboratories attached to the army, to the supply service, to the marine, to aviation, and to the Ecole des Ponts et Chaussées. Other state laboratories are at the disposition of the public for industrial and commercial business; for example, the Bureau of Testing of the Ecole Supérieure des Mines, the Laboratoire Central d'Electricité, the laboratory for mechanical, physical, and chemical tests and the machinery of the Conservatoire National des Arts et Métiers, and the laboratories of the technical institutes of the universities of Grenoble and Nancy. The Society for the Encouragement of National Industry collects the records and literature relating to industrial progress. The great syndicates in metallurgical, electrical, and chemical products have brought out publications which furnish information as to important developments.

Moreover, in our highly specialized manufacture, where a high degree of skill is one of the principal require-

ments, the necessity for a young personnel, already trained in the technique of manufacture, made itself felt even before the war. The law of July 25, 1919, dealing with technical, industrial, and commercial education was directed primarily at the creation of trade schools, and the reconstruction by the state of private schools. In addition to primary technical instruction, there now exists secondary technical instruction in the national schools of arts and trades (Aix, Angers, Châlons, Cluny, Lille, Paris), in the national professional schools (Armentières, Epinal, Nantes, Vierzon, Voiron), in the 19 practical schools of industry, and in the occupational sections of other primary and superior schools. To these public establishments must be added 20 private schools, to which the law Astier has given recognition.

Advanced technical instruction has been developed along practical and experimental lines. In addition to the schools of university rank (Polytechnique, Centrale, Ecole des Mines de Paris et de Saint Etienne, Ecole de Physique et de Chimie Industrielle, Ecole Supérieure d'Electricité), the technical institutes play a part of first importance in the industrial centers such as Nancy, Grenoble, Lyon, Toulouse, where industrialists come to seek information and to encourage research on new cases.

2. *Scientific Organization of Enterprises*

Let us notice in passing that while this closer cooperation between science and industry has been responsible for much technical progress, there has been little development of the relationships between industrialists and economists in the study of financial problems and of the scientific organization of business.

In this domain progress has been due to certain able industrialists, such as Henri Fayol and Charpy, who have been the creators of new methods. At the same time, the technique of the work of F. W. Taylor has been studied and sometimes adopted. The experimental method has been introduced into the plant; model workshops have been introduced to obtain more efficient production. The processes for increasing the output of labor were perfected in France by Georges Charpy, his method consisting of having a piece of work executed by the worker following a precise rhythm studied in advance. Experiments are made in working at varying rates, corresponding sometimes to the machines and sometimes to the state of fatigue of the workers. The task is previously planned in all of its details; there is introduced, therefore, in the shop a well thought out discipline which permits control of the quality of manufacture without irritating interference with the worker. If the manufacture is carried on without mistake, successive groups bring the product to its completion. The results obtained by these methods are reduction in the cost, diminution in the frequency of accidents, and increase in production.

M. Henri Fayol and his followers have envisaged the problem of organization of enterprises as a whole. In effect, their method is directed not only toward effective operation of business but also toward the best possible utilization of the capacities of personnel. This method, termed "administrative," rests upon the idea of coordinated action of various parts of an enterprise, thus converging industrial efforts under the authority of one head.

This objective is attained in part by the institution of the conference, that is to say, the meeting at given hours and dates of the different heads of departments, who come to meet the chief of the enterprise and report upon the branches for which they assume responsibility. The "passerelle," the second portion of the essential machinery, permits assuring the coordination between different ranks which constitute the ensemble of the personnel. The rôle of the entrepreneur, then, is expressed in the following directions: forecasting, organizing, giving orders, coordinating, controlling. M. Fayol and his disciples have expanded their principles of rational and productive organization to governmental management having as an object the maximum of service with the minimum of expense.

Standardization. The effect of standardization in a rational organization is an increased output and a reduction in the cost of manufacture. M. Carlioz, who is the most convincing advocate of standardization, affirms that the reduction of the shapes of rails decreases the amount of equipment for rolling, to the great benefit of cost price and selling price. Likewise M. Charpy, in studying the simplification and unification of purchase specifications for enterprises submitted to control on the part of the state, has pointed out the waste both of energy and of merchandise, and also the increase in price which results from diversity. Therefore they have sought to impose uniform purchase specifications upon the larger governmental departments, upon public services, upon all those industrial affairs having a monopoly, particularly those with guaranteed interest.

Specialization of plants. Furthermore, production can be increased and costs lowered by specialization of plants. There is a diminution of overhead expense. The adoption by the plants of specialization permits increased utilization of equipment by each plant; on the other hand, when a steel plant, for instance, produces the whole line of shapes utilized industrially, it must own a very large and important equipment.

In this field, the constitutions of the most powerful syndicates which impose upon members the specialization of their production are an indispensable condition of rapid progress. Such specialization can be completed by a centralization of commercial operations; for instance, by a general sales office which receives orders and allocates them among members according to the importance of orders and the capacity of various plants, thus avoiding price cutting, and possibly alleviating the frequency and intensity of crises which are so harmful to the consumer. This movement toward specialization of plants is definitely developing in France. The example of Germany, where since the end of the inflation period a movement along the lines of reorganization and specialization of plants under the name of "rationalization" has been under way, has shown us how powerful syndicates of producers can compel their members to submit to a common production and sales policy. At the same time, we have seen how they can effect the closing of plants which are badly located or badly equipped and have not proved remunerative. The new level of their prices is one cause of underconsumption.

3. Industry and Combinations of Employers

The reorganization of our productive national forces since the war has

been not only an accompaniment of industrial concentration, but more than that, a motive for the formation of employers' organizations. While one may say that the employer is disciplined and organized by social ranks as well as by technical methods, other circumstances have facilitated tendencies toward combination. During the war industrialists were obliged to group themselves in consortiums to meet the international competition; after the war they reunited in large associations (Association Nationale d'Expansion Economique, Confédération Générale de la Production Francaise).

In the coal and electrical industries, circumstances after the war contributed to the local combinations of enterprises. The insolvency of Germany obliged the French government to reduce the credits necessary for the reconstruction of the coal mines. The mining companies soon formed a combination of collieries of the north and of the Pas de Calais which, by way of a loan, have floated annuities rather than await future payments for war damages. At the same time the utilization of the waste products of coal and their combustion for the manufacture of electricity has equally encouraged the combination of enterprises of lesser importance which have organized into central electrical stations. For the complete utilization of the by-products for the manufacture of coke in the collieries there have been created plants at various places for the production of synthetic ammonia and ammonium sulphate.

An agreement among the various primary metallurgical industries and the branches of their manufacture was necessary and inevitable. These agreements have been effected sometimes by the participation of large groups (Aciéries de Longwy, Forges de Firminy, Pont à Mousson, Tréfileries du Haver), allocating orders to these enterprises where they have their interests; sometimes by the acquisition of collective participations by such firms as Schneider, and Marine-Homecourt, in the metallurgical establishments of Alsace-Lorraine and even in the Saar and Luxembourg. A rational organization of outlets was a necessary consequence of this overlapping of interests. These alliances between producers, limited in their object, up to 1925, to the improvement of conditions at home, have finally become international in scope. The reorganization of the Comptoirs Nationaux followed; in the latter part of 1926 the ironmasters of France, Belgium, Luxembourg and Germany concluded an agreement which permitted each national industry to conserve its own industrial markets. The same phenomena of industrial concentration are evident also in the electrical industries; shortly after the war there was constituted the Electrical Union.

The French industrial groups have also directed their activity toward the advance of their general interests through the intermediary of the Union of Economic Interests, which has a relation with all of the great employer organizations. In the elections of 1919 this organization succeeded in electing a number of employer candidates of its own, but in 1924 the problem was more complex. The high cost of living created great discontent in the cities and estranged the officials and numbers of workers who made the majority in 1919. Small rural proprietors manifested anew advanced social opinions, and the elections were unfavorable to the candidates of the Union of Economic Interests.

4. Occupational Groupings of Workers

In the face of this movement of employers, what has been the activity and the attitude of the workers' movement? In 1919 the Second Internationale was reconstituted at Amsterdam. Its importance, measured by the number of union members, was greatly increased. The effective membership of the Confédération Générale du Travail (hereafter C. G. T.) increased to two and a half million members. With the increase in the cost of living, strikes multiplied, including strikes of employees in banks, miners, metallurgical workers, employees in the department stores, and printers. The great railroad companies resisted the syndicalist leaders with injunctions; the attempts to strike were repressed; there were numerous discharges, principally on the Paris-Lyons system. The movement for a general strike grew in strength in spite of the resistance of the leaders of the C.G.T. The extreme syndicalist elements, dominated by Moscow, attacked the chiefs Jouhaux and Merrheim who directed the Confédération.

At the Congress of Lyons in 1920 the moderate plans of the C.G.T. carried, but the partisans of Soviet control formed an element of division in French syndicalism. They forced the C.G.T. to decree the general strike for the first of May, 1920. The strike miscarried; the government brought action against the C.G.T. which had wished to continue for other purposes; its dissolution was pronounced by law, but actually the judgment has not yet been executed.

After the defeat of the general strike, the conflict between the reformists and the revolutionists was aggravated at the Congress of Tours (December, 1920) and of Lille (July, 1921). The definite split came at the beginning of 1922. Consequently, there are now two general federations of labor in France, the C.G.T. and C.G.T.U. (Confédération Générale du Travail Unitaire). The first has developed more and more toward a sort of reformist spirit and has sought to bring its demands to the attention of public authority. It asked for the creation of a national economic council, which was established at the beginning of 1925, and has requested a vote on the proposed law to provide social insurance, the application of the eight-hour law, and stabilization of the franc. The C.G.T.U., on the contrary, recommends direct action to bring about the destruction of capitalistic society, but there is much internal dissension.

As a whole, the absence of unemployment in France up to the end of the year 1926 has temporarily turned the attention of the masses of workers from the syndicalist movement. There has been a reduction of effective memberships in both the C.G.T. and C.G.T.U. The rise of activity necessary for reconstruction work in France has enabled us to avoid some of the difficulties which certain politicians had anticipated before the cessation of hostilities.

In general, French workers had obtained somewhat higher wages before the crisis of 1921; but these increases had often been more nominal than real, particularly among certain skilled workers. As a whole, it is due to the alliance of employers and workers that the work of reconstruction has been accomplished so rapidly, but to manage this work well would have been impossible without French savings.

5. French Savings Since the War

This is, in effect, one of the factors which has enabled French industry to

reconstruct itself so rapidly. Savings applied to the subscription to shares of French industries have amounted to the following figures:[2]

	Millions of Francs
1920	6.857
1921	4.799
1922	3.308
1923	3.470
1924	5.699

During the same years the total issues on the French market reached the following figures:[3]

	Millions of Francs
1920	45.421
1921	38.975
1922	26.028
1923	21.739
1924	13.244

One may conclude, therefore, that the effort of the reconstruction of French industry has been continued in spite of the contraction of the French market and the economic conditions which developed in 1923.

The financial contraction which followed in 1926 has reached principally the railroad companies which have attempted to place their obligations, investors preferring not to subscribe to stock issues in a period of inflation. But even the creation of new companies and the augmentation of capital could not have been realized easily in 1925 and 1926 with a market disorganized by excessive exchange fluctuations.[4]

II. The Results

After having studied the steps by which reconstruction has taken place, a review of the results obtained is in order.

These were attained in the midst of numerous difficulties; in fact, at the end of 1919 the greater part of the chiefs of business were still mobilized; the inadequacy of labor because of death, the wounded and the gassed, was real. Although the return of Alsace and Lorraine compensated in number for the loss of trained men during the war, these extremely active regions had need of their own labor. The problem of raw materials also presented its difficulties in replenishing rapidly the exhausted stocks when the demand for wool, cotton, silk, and flax on international markets exceeded the supply.

How was industry going to obtain the indispensable credits? To be sure, the deposits of the great credit associations showed a rapid increase immediately after the armistice, but the banks had adopted the practice of employing a part of their liquid assets in short-term loans under the form of national defense bonds. Following the moratoria of the Bank of France, the form of payments on account was generalized, and one can see an easing up of discount practice.

In the presence of these difficulties, industrialists were ready to develop the concentration of existing industry and the further industrialization of France to the detriment of agricultural productivity and of independent enterprises.

The results of industrial reconstruction were perhaps less complete than the predictions, particularly in the metal industries, which had been assured of the possibility of attaining rapidly to a profitable position.

The textile industries. The textile and wearing apparel industries, which employ three million persons, have encountered less difficulty in development

[2] Issues of French industrial companies on the French market, according to statistics from *L'Office National des Valeurs Mobilières.*

[3] From *L'Office National des Valeurs Mobilières.*

[4] The increase of charges bearing upon securities and the increasing investment of French capital in foreign securities have tended to decrease the capital available on the national market.

since the war than the metal industries, and they have adapted themselves readily to more efficient production.

The silk industry was reported in 1919 to have reached a level of activity approaching the pre-war rate. The production in Lyon of silk fabrics has been as follows:

	Millions of Francs
1913	.467
1919	1.668
1920	2.373
1921	1.688
1922	2.253
1923	2.832

It is to be noticed that the fluctuations correspond closely to the movements of price, and that they have had their influence on the increase in activity. Besides the manufacture of silk fabrics, the industries of dyeing and finishing, which involve important capital investments, have been perfected with an important increase in maximum output.

The ribbon industry at St. Etienne and the manufacturing of braid and laces at St. Chamond likewise have recovered, rapidly attaining a pre-war level.

The wool industry, disorganized by the German occupation, has been obliged to make a greater effort than the preceding industries to recover pre-war activity; the industrialists of the north, refugees in France during the war, have created new centres in Normandy, in Eure, Sarthe, the Paris region, Bayonne, Lyons, in the Dauphine, and in the Vivarais. Immediately after the armistice, they of the north set about reconstructing their plants and resuming operations; in 1922 the plants of the region Roubaix-Tourcoing had arrived at a production comparable to pre-war activity. The region of Fourmies did not produce at that time more than one-tenth of its normal production because of greater war damage; in this region and in that of Reims and of Sedan the works of reconstruction were actively carried on. By 1922 the exportation of wool was on the increase, due both to the addition of Alsace and Lorraine, and to the quality and the novelty of fabrics offered.

The cotton textile industry since the end of the war has been subject to constant vicissitudes. Though during the years 1919 and 1920 the increase in price favored rapid reconstruction, the crisis of 1920 brought about a slowing up of industry in 1921; in 1922 production was resumed, but a slackening manifested itself anew in 1923, following the restriction of markets in Germany due to the constantly falling value of the mark and the boycott of French products.

During this time the effort at reconstruction of this industry had been considerable. 3,246,000 ring spinning machines, 877,000 mule spinning machines, and 25,500 automatic looms had been destroyed. By 1923 the reconstruction with new material had been accomplished as follows: 90.8% of the ring spinning machines, 90% of the mule spinning machines, 62.3% of the automatic looms. The French cotton industry came, therefore, to third rank after England and the United States as far as the importance of mechanical equipment is concerned. Trade-union activity has developed in this industry through the creation of the Syndicat Général of the French cotton industry.

The restoration of the linen industry was more difficult. France before the war imported a large part of the raw material from Russia. After the war the cultivation of flax diminished, so in June, 1922, the spinning of flax amounted to only 45% of the pre-war production, and weaving to about 65%. However, since 1922 one can show

definitely a progressive upward movement in France in linen weaving and in the manufacture of tulle, lace, embroidery, and hosiery.

The industries of staple and luxury clothing have progressed without interruption. From the point of view of the cutters of fine clothing, it is impossible to give exact figures either of sales or exportation, because so much is exported in the baggage of travelers. One can speak definitely only as concerns articles of jewelry, leather work, perfumery, and so forth, all of which have enjoyed similar prosperity since the war.

The coal industry. In 1914 the coal production of France was around 40,000,000 tons and the national consumption had increased to 63,000,000 tons. At the close of 1918, considerable had been accomplished in various sections toward obtaining an increased coal production, partly through better management. Coal production, including bituminous, anthracite, and lignite, has been as follows:

	Tons
1919	22,441,000
1920	25,264,976
1921	28,975,936
1922	31,940,845
1923	38,543,670
1924	44,955,320
1925	48,033,564
1926	51,000,000

It has been above all in the devastated regions that the production of coal was increased greatly in 1923 and 1924. The amounts mined in metric tons are as follows (January only):

1919	1,535
1920	122,055
1921	353,277
1922	580,726
1923	838,274
1924	1,221,993

It is necessary to add that portion of the production of the Saar which was shipped to France, amounting to the following totals:

1921	3,445,347
1922	3,534,206
1923	3,182,275
1924	5,214,030

The territory of Alsace-Lorraine has added three and a half million tons a year to the national production, but the consumption of Alsatian industry is about eleven million tons.

It is clear, therefore, that France, in spite of the arrangements of reparations in coal on the part of Germany, and in spite of the increased exploitation of its mines, remains an importer particularly of metallurgical coal.

Water power. It is estimated that ten million horse-power are to be secured from proper exploitation of our streams. The effort in this field has been continued. In 1914 about 700,000 horse power had been installed; at the end of 1921 the figure had reached 1,800,000 horse power, and in 1924, 2,400,000. The increasing construction cost prevents the great enterprises and principally the great railroad companies from pursuing their plans for electrification.

In the Alps and in the Pyrenees, electro-metallurgy and electro-chemical plants have been developed. The production of iron alloys such as ferro-manganese, ferro-tungsten, ferro-silicum, and of aluminum has increased to meet the demands of a more extended market. In the field of electro-chemistry the production of calcium carbide, cyanamide, chlorine, and soda has developed; these installations have taken large sums, for which reason they are usually undertaken by very large firms, such as the group Péchiney.

The development of the thermal production of electricity and the creation near mining companies of central sta-

tions which utilize coal of the lowest quality should also be mentioned. In the vicinity of Paris the Centrale de Gennevilliers is a model of its kind, with a capacity in 1926 of 340,000 kilowatts.

Metallurgy. Due to the richness of iron, France produced, in 1913, 5,200,000 tons of pig iron and 4,686,000 tons of steel. An industry so powerful was able to export a portion of its production by the help of the central sales office. During the war, the necessity of increasing and creating new metallurgical works in the rear of the front, to compensate for the deficit of production due to the occupation of the steel plants and blast furnaces of the northeast, has brought with it an increase in French productive capacity, still further augmented by the return of Alsace and Lorraine. In fact, in 1913, the extraction of iron ore in annexed Lorraine was about 21,000,000 tons, about equal to that of France at the same time; the number of blast furnaces in activity in the same year was 56.

But if France had the possibility of becoming one of the first metallurgical nations of the world, it failed to consider that this element of strength contained a germ of weakness. The world overproduction of metals, the lack of labor and of coke, finally the economic consequences of the occupation of the Ruhr, have in effect slowed down French metal production. The problem of world adaptation of metallurgical production to needs was evident even before the war. Furthermore, one should not fail to consider the outlay in capital upon the colonies or upon the new countries following the shortage of capital from which a great part of Europe suffered. Resumption of activity of plants with the aid of substantial credits was prevented.

The metal industries have turned toward the exportation of finished products and toward reducing maximum costs. This has had its international aspects; one solution, the division of markets, is possible only through international agreement; that is why in 1926 the manufacturers of France, Germany, Belgium, and Luxembourg sought to find a basis for agreement to avoid the evils of overproduction and price wars. To ward off the world crisis due to underconsumption and lack of production and adjustment to markets, the European steel cartels fixed a total world annual production for five countries (Germany, France, Belgium, Luxembourg, Saar) at a figure of 27,500,000 tons, and assigned allotments to the respective countries as follows: 43.17%, 31.19%, 11.56%, 8.30%, 5.78%. This alliance, contracted for five years, does not carry with it the smelters but only the total steel production. It does not extend to price agreement.

The French automobile industry enjoyed a period of prosperity up to 1920, followed by a period of low prices due in part to the increasing taxation and the constantly increasing cost of maintaining motor cars. Our export capacity, which before the war was 237,000,000 francs, increased in 1924 to 1,512,000,000 francs, but this exportation was developed only because of the premium furnished by the exchange; it has tended to disappear from the close of 1926 and the beginning of 1927. The serious situation has particularly affected our trade balance, for almost all of the necessary raw materials are nationally produced.

The chemical industry. The chemical industry has advanced uninterruptedly as a consequence of the war; in 1913 Germany occupied a quasi-monopolistic

position in the sale of chemical products; the plants in France belonged to the Germans. During and after the war, the effort to escape German control has been considerable, with such effect that today France exports some calcium cyanamide, chlorine, bromine, "*oleum*," and potash salts. In 1921 the production of dye stuffs was 6,000 tons, in 1913, 11,000 tons. The Union of Producers of Dye Stuffs has been created. In perfectly installed laboratories with specialized personnel, scientific investigations and the application of dye stuffs have been pursued.

One can also perceive a general increase in the production and exportation of the leather industry, pulled wool, and gloves. The exportation of gloves amounted to 32,000,000 francs in 1905 and passed 300,000,000 in 1924.

In the paper industry, which depends in large part upon the importations of wood pulp from Sweden, Norway, and Finland, work of reconstruction has been likewise necessary. It is divided in location, located principally in the Dauphine, Annonay, Limousin, Angoumois, the Vosges, and the region of Paris. It has generated a new problem of the supply of wood pulp. Therefore, after the war the government by a modification of the tariff favored particularly the luxury paper industries. They have already suffered an invasion of the national market by the ordinary foreign papers. French exportation of paper, boxes, and books has progressed since the war, but the level of 1913 was not passed until the close of 1922. One may say that the paper industry has turned toward the manufacture of luxury papers subject to protection. It tends more and more to turn into a refining industry well equipped from the technical point of view, but hindered in its advance by monetary troubles, since its raw materials must in large part be imported.

Conclusion

Having passed in review the steps and the results of the work of reconstruction of French industry, it should be interesting to trace the curve of French industrial production by the aid of annual indexes. M. Jean Dessirier, in the *Bulletin de la Statistique Générale de la France,* has calculated the following general index of industrial production by the aid of simple indexes of building, leather, rubber, and with the aid of indexes compiled for the extractive industries, for textiles, for metallurgy, and for the mechanical industries (1913=100):

1919	60
1920	64
1921	53[5]
1922	79
1923	89
1924	108
1925	106[6]

The work of M. Jean Dessiriers confirms the general economic movement since 1919 which we have studied by observation.

In March, 1926, M. Dessiriers, by indexes of French industrial production, also determined the actual state of the industries listed in the tabulation on the following page.

Thorough reference to these tables shows that French industry in general has recovered its pre-war level of production; but it is necessary to analyze the total production. Since 1919 the production of Alsace and Lorraine has come to be added to our national production. It is to be noticed that the chief industries (iron, cotton, ship-

[5] Crisis.
[6] Provisional index.

INDEX OF INDUSTRIAL PRODUCTION

(By industries. 1913=100)

EXTRACTIVE INDUSTRIES	
Coal	123
Iron ore	93
Other ores	120
Potash	134
Petroleum	116
TEXTILE INDUSTRIES	
Cotton	85
Linen	103
Silk	111
METALLURGY	
Pig iron	102
Steel	125
MECHANICAL INDUSTRIES	
Iron working	119
Leather working	106
Ship building	52*
Building	84
Paper	93
Rubber	599

*February, 1926.

building, construction) are those which show a level of production lower than the pre-war, due primarily to lack of markets. The productive capacity of France has been perceptibly augmented, but activity in production is restricted by the lack of adequate domestic and foreign markets.

The fluctuations of exchange, the high prices of raw materials, and the level of wages have prevented the establishment of a stable cost. Financial and monetary problems have reacted upon industrial activity. The stability of the value of our money ought to be an indispensable basis for a normal production; on the contrary, the wide variations of fluctuations have brought movements of activity or depression which involve great economic difficulty for industry. In fact, the disappearance of the export premium as a consequence of the revaluation of the franc has slowed up national production. The increase of fiscal charges and the variations in the value of funds in industrial treasuries have rendered it almost impossible to conserve value for replacement.

One may consider that the industrial situation demands immediate measures which will assure monetary stabilization, for today the whole problem of economic reconstruction in France is dominated by the problem of stabilization of the franc unit.

NEW ELEMENTS IN AMERICAN BUSINESS EFFICIENCY

By C. S. DUNCAN

I

THE claim is being continually made that industry in the United States leads the world in efficiency of management. Ten years have not elapsed, however, since the industrial world was pointing to Germany as the country in which manufacturing methods and management had reached the highest known point of perfection. At that time and in preceding years, the industrialists of this country looked to Germany for new and better ideas. What has happened to reverse the relationship? Has Germany declined or has the United States risen in efficiency? Of particular interest is the inquiry: Has the industry of this country advanced to leadership in efficiency of productive methods? If so, what are the elements of this new efficiency?

These questions are raised for immediate consideration by a series of articles appearing in the *Labor Review* on the productivity of labor.[1] In the opening article of this series the statement is made that

> We are at the present time experiencing what is perhaps the most remarkable advance in productive efficiency in the history of the modern industrial system.

It is then declared to be the purpose of the Bureau of Labor Statistics to work out an "an index of productivity per worker in as many industries as possible" based on "output per man-hour."

The measurement of the index of productivity thus in terms of labor naturally leads the unwary, and those whose special interests may be in this way promoted, to the conclusion that labor has made the most important, if not the sole, contribution to this increase in efficiency.[2] It should be stated that the writer of the opening article in the *Labor Review* clearly warns the reader against any such conclusion. But such warning has not the nimble feet upon which the striking conclusions run, and are not able to secure, therefore, the same wide-spread publicity as that given to the very remarkable conclusions arrived at in terms of labor. Hence the need for some survey of the various factors that have contributed to "the most remarkable advance in productive efficiency in the history of the modern industrial system."

Industrial leaders in the United States are not likely to admit that they lacked efficiency in 1919 or even in 1914 and previous years. We had then an industrial system that was considered fairly well developed. We called attention frequently in those days to the practical ingenuity in labor-saving machinery which characterized American industry. The remarkable achievements, therefore, in the period from 1919 to 1925, to which the Bureau's studies are largely confined, call for a consideration of new elements in productive efficiency. What are these new elements?

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[1] *Labor Review*, July, 1926, p. 1; October, 1926, p. 10.

[2] "The American Worker is Producing More per Hour Each Day," *Labor*, October 23, 1926.

II

It will be helpful in attempting to answer the above inquiry to sketch briefly certain important factors and influences that were affecting American industry at the time this survey of productive efficiency begins. This description should serve as a background against which to present the new factors that later have been introduced to serve industrial management.

Among the influences affecting the situation, it should be remembered that industry in the United States was thoroughly shaken up during the war period, that it added very substantially to its plant capacity, that it plunged from war activity into a wild period of inflation, that it later dropped from the pinnacle of inflation into an abyss of depression, and that it then rose with fair consistency toward a high level of business activity, which began definitely to reveal itself in the second half of 1922. The peak of business activity seems to have occurred for industry in general during the year 1923, but business has been on a high plateau ever since. This does not mean that the greatest volume was produced in 1923, but that relatively a more intense activity of business occurred during that year.

American industries worked their arduous way through a long series of labor difficulties in 1920, 1921 and 1922. A number of great strikes, national in importance and influence, occurred during these years, such as the steel strike of 1919, the bituminous coal strike in November, 1919, the unauthorized switchmen's strike on the railroads in April, 1920, the national coal strike and the railroad shopmen's strike in 1922, and innumerable minor labor difficulties in the shoe and textile industries and elsewhere. Since 1922, however, there has been comparative calm, generally speaking, with the exception of such squalls as have taken place in the building trades, in the anthracite field, and in some other lines.

No one can read the employment reports issued monthly by the Bureau of Labor Statistics, however, without being strongly impressed with the fact that there has been a sustained stability and balance of employment for all kinds of labor during the past four years. There is here presented a situation that can not be paralleled in the previous industrial history of this country. With industrial peace, restricted immigration, high wage levels, and continuous employment, there have come a better relationship between management and men, a better trained and organized labor force, and a material decrease in labor turnover.

As has been stated, there was a great expansion of plant facilities from 1914 to 1920, particularly in the metal trades. These new facilities, it must be noted, were founded upon the best available ideas and inventions as to plant construction and layout, mechanical devices to save hand labor, the newest types of machines, more economical use of power, and so forth. The depression of 1919-1922 gave no opportunity for operation to full plant capacity. Beginning with the second half of 1922, however, and continuing to date, there is no doubt that these additional new plant facilities have had a chance to come into action.

Manufacturing costs, considered broadly as consisting of materials, labor, and capital, only in part yielded under the strain of business depression. Materials prices receded substantially from the peak of 1920. Interest rates likewise declined, because of ample surplus funds for investment and loans.

It has been the boast of organized labor, on the other hand, that the wage level dropped less than 10% through the period of unemployment. Thus the striking increase in real wages began to reveal itself in the second half of 1922, when labor generally began to be better employed. In the intervening years the wage level has practically returned to the 1920 peak.

The history of prices for this period makes a different story. Wholesale prices reached their highest point in May, 1920, and fell at first very rapidly and later more slowly until near the middle of 1922. Signs of stability then appeared, with a slight trend upward into 1923. For the past three years, however, it seems fair to say that wholesale prices have presented a softened and declining market. While there have been brief periods that showed a rise in the wholesale price level, these higher prices could not be long sustained. Every new element that strengthened the market soon lost its potency, and prices began to sag.

The importance of such a situation is obvious. The two millstones that grind business profits into nothingness are resistant or rising costs of production and a soft, or declining, price. Under such conditions, business management must find relief, or profits and the incentive to business operation disappear.

A great many industries have been faced with these conditions during the past three years. While in 1923 wholesale prices responded more quickly to an increased demand than materials prices and wages, thus allowing for a comfortable profit margin, the following year brought forth the repeated remark of "doing a big business with no profit." Gradually such remarks grew fainter and died away in silence, and now we are reading the record of marvelous achievement. Evidently a way out has been found by industrial management. The opportunity for profits has in some way been restored.

III

With this broad and general background, let us enter into an examination of the new elements in business efficiency that opened the way to profitable enterprise. Such an examination should reveal those new elements of industrial management which have made American business profitable and have advanced the United States to the forefront of industrial efficiency.

Capital Expenditures

One of the three great agencies with which industrial management works is capital. It will be remembered that following the tightness of the money market in 1920, when interest rates were high, there began again the great flood of gold to this country which had started during the War. In the period of depression, surplus funds for loans and investment piled up. Money rates declined. Industrial management had at its beck and call ample funds for capital expenditures.

That a great volume of capital came into service of American industry is shown by the following figures, which represent new corporate issues in the United States, exclusive of refunding:[1]

1921	$1,823,004,851
1922	2,335,734,207
1923	2,702,496,155
1924	3,322,295,764
1925	1,000,225,167
Total	$11,183,756,144

[1] *Commercial and Financial Chronicle*, January 23, 1926, p. 410.

In a publication by the Department of Commerce, *Estimated National Wealth,* it is stated that the total capital for land, buildings, and machinery, obtained from the balance-sheets of December 31, 1919, was $44,566,593,771. It is estimated that there was an increase between 1919 and 1922 of 18.05%, giving a total of capital in 1922 of $52,610,863,947. The value of manufacturing machinery, tools, and implements constituted 24.3% of the total capital of manufacturing corporations in 1890, rose to 25.9% in 1900, and to 27.5% in 1905. It is estimated that this tendency continued from 1905 to 1922, and the percentage for 1922 was placed at 30%. This gives a value of machinery, tools, and implements in manufacturing industries of $15,783,260,000.[4]

Although these figures that stagger the human imagination give ample demonstration of the continued flow of capital into lands, buildings, and machinery for the aid of productive enterprises, there is nothing apparent on the surface that may be considered a new element in business management. This is a process which has been going on for many years. In 1905 Congress directed the Census Bureau to confine its census of manufacturers solely to manufacturing enterprises working under the factory system. There was thus finally excluded from the Census figures the hand and neighborhood trades, and American business was placed definitely upon a machine industry basis.

New elements, therefore, must be sought in the application of new capital to industrial enterprises. What, concretely, has resulted from the expenditures of these vast sums of money? In part, there has been a restoration of depreciated plant, replacement of worn-out or obsolescent machinery, in part the building of new factories and the installation of new machinery, in part additions to old plant, and in part a relocation of industry. Unfortunately, no comprehensive data are available at this time to describe in detail these changes. The conclusion, however, must surely be drawn that capital's contribution to managerial efficiency lies somewhere in the results of great sums of money expended for the enlargement, the construction, the re-equipment of industrial establishments. Some light, however, can be thrown upon this important subject by available information.

Mass Production

The most obvious conclusion that may be drawn is that industrial plants have increased in size, and that industrial production has benefited from an extension of mass or standard production. There is evidence that leads to the conclusion that some part of the increased efficiency in industry is due to an increase in size of plant and the consequent economies through standard processes, larger volume, larger and more powerful machines, and various labor-saving devices which accompany this large-scale production. A study by the Census Bureau on the integration of industrial operation shows that in certain instances the size of establishments has increased, as, for example, in the manufacturing of salt, beet sugar, iron and steel, lumber, and leather, in meat packing, and (with certain qualifications) in the textile industry. The railroads have also, within the last three years, increased the size and capacity of certain repair shops to accommodate the increased size of locomotive and car units.

[4] *Estimated National Wealth* (U. S. Department of Commerce), pp. 9-10.

The study above referred to, however, warns against any general conclusion that there has been a tremendous increase generally in the size of industrial establishments in this country within recent years. It says, for example:

> The census data certainly cannot be used to support the hypothesis that the tendency for industrial establishments since 1900 has been in general to increase in size. The rapid concentration, so evident in the nineteenth century, is by no means so marked in the twentieth.[8]

The conclusion is reached that in some lines there has been an increase in size, while in other lines the trend has been in the opposite direction.

With respect, therefore, to size of industrial establishments, it must be said that some little credit for increased efficiency in industrial operation may be attributed to this factor, but that relatively to earlier years it cannot have contributed as much as it formerly did. Furthermore, there has undoubtedly been within the last six years a more complete utilization of plant than perhaps is true of any other period. This applies to business generally, because exceptions could be found during the war years in certain metal trade industries.

This more complete utilization of plant capacity, most striking within the last four years, has not been as seasonal in character as was formerly true. There has been, beginning with 1923, a more stabilized and continuous production throughout the year in many important industrial lines. Particular attention is called to this factor by the president of the Bethlehem Steel Corporation. The Department of Commerce has pointed out that the building trades generally have become somewhat less seasonal in character, and that this tendency toward stabilization has had many ramifications in other industries, with a consequent tendency there toward a more stabilized operation. The railroads, for example, have discovered the art of laying steel rails during the winter months. This has been an important stabilizing factor in one basic industry, with reflections in many others connected therewith.

There is evidence, then, to conclude that, in addition to the contribution which an increase in size of industrial establishment has made toward efficiency of operation, a more important factor is the more complete and stabilized utilization of the plant itself.

New Machinery

In the field of new machinery there likewise can be found a most important contribution to industrial efficiency. American business has the reputation of being willing to scrap machines with long years of service still remaining in them for the purpose of replacing them with more efficient new machinery. The shake-up of industry during the war, the requirement for continuous operation by day and by night, the additions to plant and equipment, brought an important element of new machinery into American industrial enterprise.

It doubtless also made industrial management even more keen to replace old machinery with new and more effective types. In this field comprehensive information is not now available as to what has actually taken place, but wherever one turns his attention for investigation he discovers this element is present. For example, there was recently installed at Cincinnati a great power station said to produce

[8] *The Integration of Industrial Operation* (U. S. Census Bureau), p. 45.

energy equivalent to the work of nine million men. It is reported that Chicago will soon have installed a steam turbine electric generating engine that will produce 150,000 horse-power, equivalent to 8,000,000 men working 8 hours a day, and that there is now under construction one designed to produce 280,000 horse-power. The International Paper Company has recently released power from its plant on the Gatineau River which has a capacity of 373,500 horse-power. It is reported:

> Much new and improved machinery is being introduced into the [paper and pulp] industry at the present time and this probably accounts for the 34% increase in productivity which took place in the nine years from 1917 to 1925.[6]

Of the Portland cement industry, the *Labor Review* says that the increased productivity in this field

> . . . . can be partly accounted for by the installation of larger and better machinery and the tapping of good mines.[7]

A study of a New England cotton mill in the *Labor Review* states that

> . . . . A third factor is the installation of new and improved machinery, which has done away with the employment of many workers.[8]

There are many other illustrations of this same tendency that might be cited. General observation reveals the very extensive use, for example, of the steam shovel to displace hand work in the construction trades. On the farms, the number of tractors in 1914 was 15,150; in 1923 it had grown to 133,743. A very recent development has been the combination harvester, which, in a certain section of Texas at the last harvest, appeared in the wheat fields and cut and threshed the grain in one continuous operation, with the result that a steady stream of grain flowed from the fields to the elevator and shipping point. There is an intense eagerness in the search for a cotton-picking machine which rumor says is on the verge of successful development. Everywhere and in almost all industries the same phenomenon is discovered.

Related to this same subject is the increase in primary horse-power that has occurred within recent years. According to the *U. S. Statistical Abstract*, 1924, the primary horse-power in American industry has been as follows:

1914	22,290,889
1919	29,327,669
1923	33,094,228

That the above increase of available horse-power, which is exclusive of electric motors, is due to increase of size and not to increase of number of the generating units is seen from the fact that the number of steam engines in 1914 was 137,134, in 1919 was 122,508, and in 1923 was 90,116. The number of internal combustion engines in 1914 was 37,115 and in 1923 it was 15,730. While the primary horse-power has very materially increased, the number of generating units has substantially decreased.

The figures with regard to the use of electricity, as given by the *Statistical Abstract*, 1924, are even more striking. They are as follows:

ELECTRIC MOTORS

	HORSE-POWER	
	In Plant	Rented
1914	4,938,530	3,884,724
1919	6,969,203	9,284,499
1923	8,822,751	13,365,628

[6] *Monthly Labor Review*, July, 1926, p. 17.

[7] October, 1926, p. 13.

[8] "The Productivity of a New England Cotton Mill," *Labor Review*, October, 1926, p. 29.

In this connection may be cited the conclusion reached by the Department of Commerce:

> Labor in industry is aided by the constantly increasing use of machinery, which tends towards greater quantitative output per wage-earner. One indication of greater use of machinery is the increase in the horse-power of prime movers installed in manufacturing establishments. Thus, from 1914 to 1923, horse-power increased by one-half, the rate of gain being twice as great as that in the number of wage-earners. The growth in horse-power does not fully reflect the increase in the efficiency of machinery, but only that in the quantity or magnitude of machinery.[9]

These facts are sufficient to show the striking tendency toward making the workman the director of energy, rather than the supplier of energy. It is the accelerated movement in industry to substitute the use of brains for the use of muscle. When fully surveyed, there can be little doubt that the progress of this movement in the last few years has been of tremendous importance in increasing the efficiency of American industry. Capital expenditures have made it possible.

Management

Industrial management, among other things, directs the expenditure of capital in the service of production. Many of the results recounted above might be considered the results of managerial discretion and direction. There are other factors also that may be attributed more definitely and specifically to industrial management.

One of these is the introduction of labor-saving devices. By this is meant something over and above the contribution of what is generally understood as machinery in the saving of labor. Take, for example, a wheat elevator. The construction and arrangement of a modern elevator takes advantage as far as possible of the flowing quality of grain. By conveyors the wheat is carried to the top of the elevator and thence is directed in its flow through pipes on to traveling conveyors, which are broad belts, cupped in the middle, so arranged that the flow can be directed at will. The moving platform in the automobile manufacturing industry is another illustration.

The idea of a conveyor is yearly becoming more wide-spread in its application to all sorts of industries. With respect to the New England cotton mill, a study of which was referred to above, it is stated that

> A second factor accounting for this increase in production is the conveyor system already mentioned. The number of employees this has eliminated has been variously estimated, but there is no doubt that it is a large contributory factor in increasing the efficiency of the mill.[10]

There is an increased use in storerooms of roller skates for rapid movement of those who seek supplies for immediate use. There are the motor-driven trucks on freight platforms, in railroad stations, and elsewhere. The utilization of this conveyor idea by large mail-order houses is well-known. One of the most striking characteristics of the modern plants for making cereal breakfast foods is this same idea.

In addition to devices which save the use of human strength, by moving either materials or men mechanically from one point to another, the idea of making any such movement unnecessary has been developed, for instance in the reorganization of a plant so that the materials are as near as possible to the point where they are to be used. These

[9] U. S. Department of Commerce, *Year-Book*, 1925, pp. 14-15.

[10] *Labor Review*, October, 1926, p. 29.

labor-saving and movement-saving ideas are factors which contribute their share to increased efficiency of industrial operation, by no means a slight contribution.

Somewhat analogous to what is referred to here as labor-saving devices is the careful study given to the layout of the plant. In the construction of new plants within recent years, whether these were additional plants or plants that have developed because of a relocation of industry (as in the textile industry and in the shoe industry), use has been made of the latest practical ideas for scientific layout of the plant. Undoubtedly this contribution by experts in scientific management has resulted in an important saving in labor. It will be found a part of efficient industrial operation wherever conditions have made it possible.

Another important contribution to industrial efficiency, and one which may also be attributed to management, is the so-called "simplified practice." The United States Department of Commerce has taken a leading part in the study of reducing the number of types, styles, and grades of commodities in several important lines. The effect of the resulting economies upon industrial efficiency through greater standardization and increased output per grade or type is obvious. In discussing this subject the Commerce *Year-Book*, 1925, says:

> It [the Department of Commerce] has cooperated in surveys of production and demand and in the analyses of such surveys. Upon these analyses, the groups have decided the extent to which excess variety could be eliminated with mutual benefit. This action, when applied on a collective basis, has become known as simplified practice. It has resulted in savings of millions of dollars annually. The manufacturer has benefited through lower investments and equipment costs, through improved production, faster turnover of stocks, and better service . . . . The worker has benefited through the stabilizing of operation, increased output, and increased earning power, as the production has been concentrated on fewer lines.

Several industries have been able during the last four years to introduce acceptable types of piece work which have shown results that led to increased production per man-hour. It is said that in this way wastes are eliminated, and there are fewer discards and less scrap to be utilized, with the resultant increased output of products of a higher grade.

The management also has been able to benefit from the continuous operation of industry and the more complete utilization of the plants all the year around. Perhaps certain economies realized within the past few years may only have awaited such a condition to be employed; nevertheless, the stability of employment has resulted in maintaining a trained and experienced force from year to year with resultant gains in efficient operation.

The industrial manager, furthermore, has had at his service a new power which has made itself felt to a greater and greater extent during the past five years. This power is statistical and economic research. Through a careful analysis of the underlying statistics in the individual industry, through careful surveys of general business conditions, and through business forecasting, management has been able more intelligently to direct its efforts. As never before in the United States, there is now available for the individual manager and for industries as a whole a statistical control which has resulted, in an increasing way, in intelligent direction of effort and in increased efficiency of industrial operation.

More active efforts have been made within these years in engineering and

chemical research. The results of this important and fundamental research work have been made available for the industrial manager in the United States. While it is not possible to measure in any tangible units the contribution made through research, instances could be discovered where improved management and increased industrial efficiency could be attributed directly to the results of such activity.

Outside Influences

There are influences from outside the industrial establishment that affect the ability of a manager to produce efficiently, either for good or for ill. Within the past few years there are two outside influences that have affected American industry most importantly.

One of these has been called variously "consumer buying," "hand-to-mouth buying," and "buying for distribution." By whatever name it goes, it is a wide-spread practice now for retailer and wholesaler to purchase for his immediate needs and not for a surplus or for storage. Industrial management is only now beginning to realize the fundamental effect of this new influence. It is possible to see, however, that some of the results of it are:

1. Stability of plant operation, with a tendency to eliminate seasonal operations;
2. A stabilized and therefore a trained and experienced labor force that can usually be held together year in and year out;
3. Lower inventories, resulting in less waste of time and effort in handling and in accounting for surplus materials and stocks;
4. A general toning up of the entire plant operation.

The savings in operating costs from these conditions are apparent. It is not so easy, however, to demonstrate their full effect upon efficient operation. That they are a continuous and permeating influence cannot be doubted.

The second influence from outside is efficient transportation service. The improvement in the service given by steam roads has frequently been commented upon. This service has become more expeditious and more dependable. Without it there could not be the hand-to-mouth buying referred to above. It would not be possible with deficient transportation to maintain continuous plant operation. Stability of industrial operation, combined with speed and increased efficiency of output, depend directly upon this service.

The railroads, however, do not stand alone in contributing more efficient transportation. American industry discovered during 1917 and 1918, through the pressure of necessity, a new means of short-haul transportation. This was the motor truck. It has never discarded this new transportation agency. On the contrary, motor truck operation has grown in use and efficiency year by year. While it is a new and unstabilized industry in itself, with improvement to the highways and improvements in equipment the truck has contributed more and more to keeping terminals clear, thus preventing the steam carriers from being clogged with short-haul, less-than-carload freight, and affording a means for industrial establishments to make prompt short-haul deliveries, particularly over-night deliveries, both of materials for their plant and of finished products for consumption or long-distance shipment.

Labor

Obviously the actual contribution to productive efficiency by labor is not susceptible of quantitative measurement

except by careful surveys in individual establishments. The best that can be done, therefore, is to point out some of the incentives to more efficient productive effort on the part of employees. Among the important new incentives are:

1. Continuity of employment at good wages;
2. The consequent training, skill, and adjustment to individual plant conditions and requirements;
3. A settling down from war-time disturbance;
4. Welfare and general personnel work; employee representation;
5. Opportunities to increase earnings through piece work;
6. Shorter actual working time, with less fatigue, greater freshness, more recreation, and so forth;
7. The pressure of high living costs;
8. The pressure of financial undertakings through instalment buying;
9. Continued peace and increasing harmony, due in considerable part to greater capital interests by employees, as evidenced by increased stock ownership, labor banks, and so on.

It may be mentioned, as a matter of interest, without comment on any possible significance the statement may have, that the studies by the Bureau of Labor Statistics show the highest percentage of increase in productive efficiency, as measured in man-hours, to be in the automobile industry, where labor has not been organized, and the lowest percentage of increase in productive efficiency in boot and shoe manufacturing, where labor is highly organized.

It should be added in this connection, moreover, that wherever instances appear of continued hand work, as in bricklaying, or as in the manufacturing of shoes, where even in the year 1926 the lots are so small that it is cheaper to have the cutting done by hand than to have new dies made for the cutting machines,[11] the evidence shows a very small increase in productive efficiency. These facts tend to the conclusion that the most significant contributions to increased efficient production have come, not directly from labor efforts, but from other influences.

IV

A study of the increase in productive efficiency leads naturally to a consideration of the means and methods of measuring this increase and of the possibility of allocating to each factor its proper credit. It seems almost impossible to select one factor as the unit of measurement without the conclusion being drawn that the factor used as a unit of measurement is that which has contributed mostly, if not entirely, to the increased efficiency shown.

There is probably no industry in which the factors contributing to effective operation are more complex and more difficult of segregation than the steam railroad transportation system. The question of a simple and reliable test of efficiency in railroad operation has frequently been raised. Various units have been used as the basis of measurement, and yet the question still remains without a simple and satisfactory answer.

The Bureau of Statistics of the Interstate Commerce Commission first issued in December, 1924, a statement entitled "Unit Costs of Railroad Service, 1915-1923." The purpose was to discover a unit of cost which should serve as the basis of comparison year by year as to the efficiency of railroad operation. The study is based upon the operating expenses per train mile, per car mile, per net freight ton mile, and per passenger train car mile. These calculations may very properly be used to

[11] *Labor Review*, July, 1926, p. 15.

serve certain purposes. They aid very little, however, in allocating to the various factors due credit for the contribution of each to the results of all. It would be possible to measure railroad accomplishment in terms of man-hours of labor and show an increase in efficiency corresponding to the increases shown by the Commission's method.

To use the railroads further as an illustration, it may be pointed out that a method which may serve many useful purposes in measuring relative performance is to take a number of different efficiency tests, and to see how many of these tests show continuous improvement. For example, the Bureau of Railway Economics has published a series of tables showing maximum performance with respect to certain factors in railway operating statistics. In these tables, performance is measured by index numbers representing percentage of serviceable locomotives, percentage of serviceable cars on line, car miles per car day, net ton miles per car day, net tons per loaded car, percentage of loaded to total car miles, net tons per train, gross tons per train excluding locomotive and tender, gross ton miles per train hour excluding locomotive and tender, locomotive miles per locomotive day, pounds of coal per thousand gross ton miles including locomotive and tender, and net ton miles per train hour. All of these are factors in freight service. A study of this list will show the usefulness of these many different tests of a complex operation. It may well be argued that other factors should be considered, as, for instance, the performance per man-hour, but the point is that it may properly be concluded that, if a complex performance problem is approached by the measurement of many different units, the performance which shows an increase in the index number of all these units will inevitably be a performance marked by an increased degree of efficiency.

By further study of the railroads, where information is available and comprehensive in character, it is possible to discover with considerable detail what concrete results have been obtained by capital expenditures. One can learn, for instance, the number of new locomotives put in service, the number and type and size of new cars put in service, as well as the character and amount of other equipment. It is further possible to follow the expenditures made for additional track, for heavier rails, for additional ballast, as well as the expenditures made on shops and engine houses and for other general improvements. We can learn of the increase in tractive power of locomotives, the increase in capacity of freight cars, the increase in number of tons per train load, and the increase in average carload. It is possible to survey in some detail the mechanical improvements in shops and engine houses, the increase in size of these plants, and improvement in type of machinery. Information is available with respect to the effective use, for example, of the humble "retarder" coming into extensive use in the "hump" classification yards. Many other factors can be followed in detail in this great and complex industry.

The question, therefore, of measuring increased efficiency in American industrial enterprise becomes a complex one, as well as one possessing social significance. It may be made entirely too simple, thus leading to misinterpretation of the results. For practical service, however, and for the enlightenment of industrial managers as well as of the public, it would seem the wise thing to make the tests of efficiency as diverse as possible, and then if any com-

parisons are made to let them be made of the total results of these tests, rather than of a single test.

V

An attempt has been made in this discussion to isolate certain of the more important factors which have contributed in a major way to an increase in productive efficiency in the United States during the past few years. It will be observed that some of these factors may be attributed to additional use of capital, some to a more enlightened, effective, and wise management, and some to labor.

These new elements in American business efficiency that have contributed most conspicuously in placing the industry of the United States at the forefront of the world in productive effectiveness may be summarized as follows:

1. There has been a greater capital expenditure, more wisely and effectively applied.

2. There have been introduced larger power units that have operated through new machinery to more effective productive efforts.

3. There has been an increase in size of plants, with consequent changes in production by certain industries; and, of considerably more importance, there has been a more complete and continuous utilization of plant facilities.

4. In addition to larger, new-type machinery with its many new inventions to save labor, there has been a growing and important utilization of mechanically operated conveyors.

5. The layout of the industrial plant, both where new additions have been added and where new factories have been constructed, particularly important where industries are being relocated, has been given careful thought and consideration in the light of important studies made in scientific management.

6. There has been in many industries a considerable elimination of excess variety in products, generally known as simplified practice.

7. Engineering, chemical, economic, and statistical researches have placed the results of their scientific work at the disposal of industrial managers, who have availed themselves of these practical results more generously than in the past.

8. There has been an extension of the so-called "hand-to-mouth" buying (that is, for immediate needs), with a consequent reaction to the advantage of productive efficiency.

9. There has been a more adequate, expeditious, and dependable transportation service, which has contributed fundamentally and essentially to many of the new activities that have added so greatly to productive efficiency.

10. There has been, as a result of many incentives, better cooperation by employees.

No one will claim that American industry has reached the apex of its efficiency. In many lines of endeavor, activities have been cautious and conservative. The future holds vast and unmeasured opportunities for further development. No survey, however, of industrial activities in this country will lead to any other conclusion than that all important factors in production have worked together in a great cooperation for the results which have been really marvelous in their character.

LEADERSHIP IN THE AUTOMOBILE INDUSTRY, 1903-1924

By RALPH C. EPSTEIN

THE preceding article discussed the rise and fall of all passenger car manufacturers during the period 1903-1924. Figures were presented to show both total and year-by-year entrances into and withdrawals from the automobile industry, and an analysis of the general causes of failure was essayed. The purpose of the present article is somewhat different. Not failures in general, but the rise and fall of individual producers will be discussed; not mortality rates for the industry as a whole, but the progress of particular firms, each compared with the other, will be traced.

This analysis of the rise and fall of companies in terms of their comparative leadership in the industry divides into two parts. The first portion, which deals only with the period 1903-1916, constitutes an examination of each company's history in order to see whether or not that firm ever was counted among the first 25% of all firms in the industry, and, whether or not it could at one time be so counted, to ascertain what was its fate subsequently. The second part of the study, which covers the longer period, 1903-1924, undertakes a more detailed examination of the exact positions of a smaller group of producers—the firms which have, at one time or another, definitively stood in the very forefront of the industry. The precise nature of these two investigations will be made clear in the discussions which follow.[1]

I. Movements between Production Groups, 1903-1916

To trace the movements of specific firms in a comprehensive manner, all companies engaged in the manufacture of passenger cars at any time between 1903 and 1916 are ranked for every year according to the number of cars which each produced. The largest producer in any one year heads the list for that year, the others follow in order of rank. Thus arrayed, the list for each year is divided into three sections. The first or top grouping contains the highest one-fourth of the companies listed. The second or middle grouping then constitutes the central half, or the middle 50%, of all the companies arrayed in that year, according to their positions in production. The third or bottom grouping includes the lowest one-fourth of the roll of firms for the year. In the language of statistics, the first and third quartiles, and thus the interquartile ranges, are found for each series.

These division points ascertained, all firms which enjoyed a minimum life of five years or over during the period 1903-1916 may be specifically classified according to their positions above, below, or between these points in various years. If in such a classification the

[1] As in the case of the preceding article, I am indebted for aid and suggestions to Colonel Charles Clifton, Professor Edwin F. Gay, William E. Metzger, J. Newton Gunn, Roy D. Chapin, Alfred Reeves, and others.

positions of special firms are followed, the results will indicate how many of the firms remained in the first division, or above the first quartile, for each year throughout the entire period of their five years or more of existence; how many at one time standing above the first quartile sooner or later dropped to the interquartile range (the middle group), or even lower; or how many that were for a time below the third quartile (in the lowest group) ever rose to positions of leadership (the highest group).

The reasons for limiting the firms included in this count to those which have enjoyed a five-year life or more are fairly obvious. A firm which is in business but one year exhibits no rise or fall at all; while one that lasts but one or two years may evidence by its position nothing more than birth and death pangs. It rarely, if ever, rises to any substantial position, and its history belongs to the subject of entrances and exits, considered in the preceding article, rather than to that of rise and fall in the sense now meant. In ascertaining the movement of each firm, moreover, neither the first year's production figure nor the figures of the last two years of its existence (if it went out of business during the period here considered) have been counted. This latter procedure has been followed because it often took from 12 to 18 months after the occurrence of a crisis in a concern's life, or after a decision to retire, finally to wind up affairs. Thus, five years has seemed to be the minimum length of life which could well be established for the purpose in mind.

II. General Shifts in Position

There were 63 firms which enjoyed this minimum life between 1903-1916. Many of these firms, of course, had lives much longer than this; a number lasted 8 years or more, and an occasional one lasted 12 or 14. A number continued in business beyond 1916, and many of these still remain in the field. The average life which the 63 firms had enjoyed up to and including 1916 was: arithmetic mean, 10.8 years; median, 10 years.

Over this period of 14 years, then, we may note the rise and fall of these companies as depicted in Chart 1. From the preceding discussion, the construction of this rather unconventional-looking diagram should be fairly clear. Its top "box" or rectangle represents the group of firms standing above the first quartile, occupying positions of leadership; the bottom "box," those standing below the third quartile, in the lowest positions; while the middle "box" represents the interquartile range, that is, the central half of the series.

The 63 curves, or lines, of the diagram represent the 63 companies. The diagram covers no particular year between 1903-1916, but the period in general; those several curves which run straight across the diagram, for example, lines *a* and *b* in the top box, indicate that the companies they represent never changed their positions as between the upper, lower, and middle groupings throughout the entire period. Those curves which move, however, from one rectangle into another—which cross either or both of the two heavy black bands denoting the first and third quartiles—indicate that the companies they represent, at one time or another, shifted their position to the locations indicated, remaining in the new positions either temporarily or permanently. The companies represented by curves *h* and *i*, for example, which start in the top box of the dia-

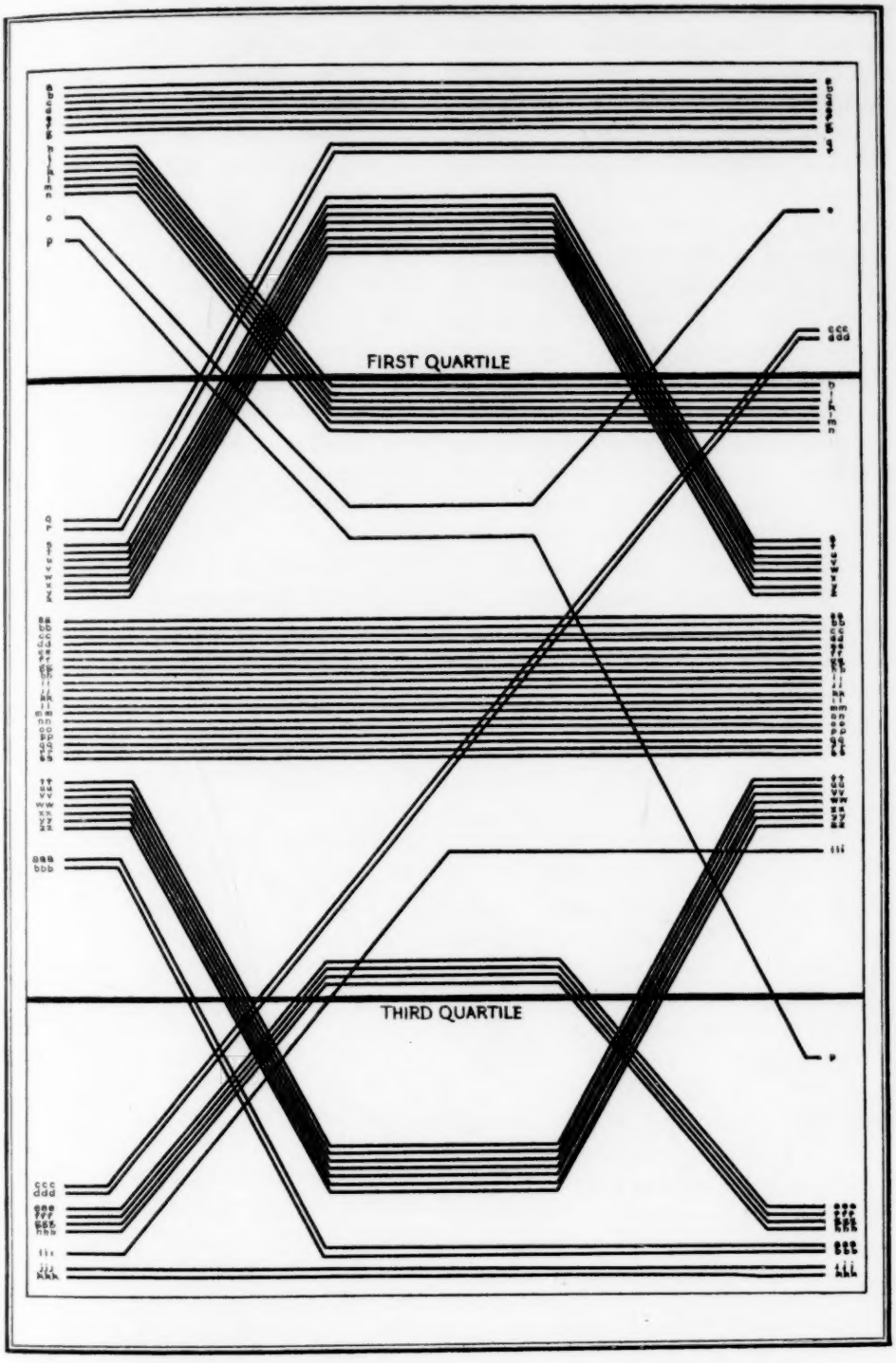

Chart 1: Movement of 63 automobile firms over the period 1903-1916. (*See text for explanation.*)

gram, at one time during the period 1903-1916 produced sufficient automobiles to place each of them among the highest fourth of the companies in the industry. But at some later time both of these companies dropped out of this class.

Examine now the movements of the 63 companies as shown in this diagram. Nearly half of them maintained their position within their respective ranges throughout the entire period: 28 curves run straight across the diagram.[2] Somewhat over half the total number, or 35 companies, in some year either rose or fell. Five of these 35 rose and remained permanently on the high level (curves *q*, *r*, *ccc*, *ddd*, *iii*). Nine fell and remained permanently on the lower level (curves *h* to *n*, *aaa*, *bbb*). Of the other 21, all save one oscillated; they either rose and then fell again, or else fell, then rose again. The one which did not oscillate dropped twice—it fell steadily (curve *p*).

Now as to the detail; for in this instance, as often happens, it is from an analysis of details that conclusions best come.

There were 7 firms which, so long as they remained in business, held in every year their positions in the first division (curves *a* to *g*). Not all of these firms, it is true, continued in business throughout the whole of the period, but the percentage of withdrawals among the firms which have at any time stood above the first quartile is in general quite small. Only in years prior to 1906 did any large proportion of leading producers undergo vicissitude. That these 7 firms retained their positions would seem to indicate that leadership in a new industry *can* be maintained for 14 years at least, by a large proportion of the companies in the vanguard.

But leadership can also easily be lost. Nine other producers, each of whom in some year or other stood proudly in the first division, fell, in some other year or years, below it (curves *h* to *p*). Seven of them sank to the middle group and there remained (curves *h* to *n*). One of them fell to this middle division and later rose again to leadership (curve *o*). The ninth one remained in the middle division for a time, then dropped permanently to the bottom group below the third quartile.

Conversely, an almost identical number of producers, 8 to be exact, who were once members of the middle group, managed to rise for a time to positions in the first division, but before the close of the period rejoined the interquartile range (curves *s* to *z*). Seven other members of this middle group fell at one time or another to positions below the third quartile; but in time they all returned to the range from which they came (curves *tt* to *zz*).

III. Summary of Movements from Group to Group; Exceptional Cases

The outstanding features of the progress of these firms between divisions may be summarized as follows: Movements out of the middle range, made in either an upward or a downward direction, are decidedly temporary —they tend in time to reverse themselves; similarly, although to a lesser extent, upward movements from the bottom group into the middle group tend

[2] The parallelism of those curves which move together does not indicate, it should be clear, parallelism of individual firms relative to one another *within* any one group or rectangle, but only that the firms represented remained in similar positions with respect to being above, below, or between quartiles.

also to be temporary; but downward movements out of the first group tend to be permanent. To put it more vigorously: *mediocrity, once surmounted, is soon reverted to; incompetence surmounted is also soon reverted to; but leadership, once lost, is hardly ever seized again.* That only one of the 9 firms leaving their positions in the first division ever returned is somewhat startling.

A further feature connected with the rise and fall of these firms is that most of the movement has been between immediately adjacent groups; that is, from the top division (or from the bottom division) into the middle division or vice versa; not often from bottom to top, or from top to bottom. There are only 3 instances among all 63 companies in which movements of this more extreme type have occurred (curves *p, ccc, ddd*). These three firms have been investigated in order to ascertain what special circumstances, if any, were present.

The two cases in which there have occurred climbs from below the third quartile to above the first quartile are quite different in character. One (curve *ccc*) is that of a wagon works which engaged for some years in the production of automobiles, making a high-priced car. During the period here under consideration, this company, large and well financed, discontinued its high-priced line and purchased the business of another automobile firm, a successful maker of low-priced cars. With the excellent manufacturing organization thus acquired, the company had little difficulty in reaping the great gains attendant, after 1912, upon cultivation of the market for low-priced automobiles.

The second firm which successfully lifted itself out of a position below the third quartile (curve *ddd*) did so chiefly because of engineering skill. It, too, made an expensive car, but about 1907 it pioneered in the combination of several features which other makers were soon to follow and which only comparatively recently,[3] among large cars, have been generally discarded. This company introduced the first car[4] with a six-cylinder engine, four-speed selective type sliding-gear transmission, and double ignition system employing a high-tension magneto. It was not only a well designed but an exceptionally well constructed machine, and immediately came into public favor throughout the country.

The third exceptional instance (curve *p*), also of a high-priced machine, is that of a firm which fell from above the first quartile to below the third. This decline involved a gradual loss of sales over a period of more than half a dozen years. The firm remained in business for 13 years all told. Its cars, especially in the later years of its history, were handsome vehicles and enjoyed a good reputation. Except for the fact that the factory was located in New England, where conditions do not seem generally to have been favorable for automobile manufacture, no good explanation for its decline has yet been found. It continued throughout its life to make high-priced cars—one model was exceptionally high-priced—and this may have contributed to its difficulties after 1911-1912, the market for high-priced cars, as has been pointed out in the preceding article, having become practically "saturated" after those years.

The analysis of the movement of the 63 firms from group to group may be

[3] During and since the World War.

[4] At least, the first American car.

concluded by the following summary figures:

Number that neither rose nor fell...	28
Number that rose and remained on higher level	5
Number that fell and remained on lower level	9
Number that either oscillated or else fell twice	21

IV. Movements of Conspicuous Leaders Relative to Each Other, 1903-1924

The discussion of the preceding sections has dealt with the movement of firms from one broad group to another. The data to be presented in this and the sections to follow concern the fortunes of certain conspicuously successful producers, each compared with the other.

Twenty-eight companies are included in this more detailed study. Most of them have tasted generously of success. Some attained the heights a score or more years ago and have subsequently fallen. Others have remained on a high level; while still others have only recently climbed upwards. All, however, at one time or another in their history, have ranked among the first 10 makers of passenger cars, in point of the number of vehicles produced.[5] As in the study of exits and entrances undertaken in the preceding article, the term "firm" or "company" here designates a producing unit rather than a corporate entity. Thus, the companies which now comprise the five divisions of the present General Motors Corporation—Buick, Cadillac, Chevrolet, Oakland, Oldsmobile—are counted as separate producers. It happens, however, that the more recently organized Durant group of companies, because of the form in which figures were available, is counted as a unit. This one anomaly in treatment occurs only in the last year which the study covers, and is therefore unimportant.

The positions of the 28 producers who in one or more years managed to qualify as members of the "first 10" are shown in Chart 2. Their positions relative to one another are given at three-year intervals. Curves *A, B, C,* to curve *J,* inclusive, represent the 10 producers who in 1903 led the industry in their individual volumes of production. Producer A was first; B, second; J, tenth. Follow their fortunes in the years that follow. Producer A is never again first. Producer B eventually stands in a position below tenth place and there remains. Producer G, once sixth, is likewise now in the "under tenth" category. And producers D, E, F, J, and I are out of business entirely! Producer C alone has risen; he now heads the industry, a position which he has held for over half the period.

If there had been no rise or fall of leading firms at all, relative to one another, the several curves of the diagram would never cross. As it is, however, the chart looks almost like a field

[5] As in preceding sections, this method of measuring the standing of manufacturers makes no allowance for variations in the size, price, or quality of vehicle produced, but is the simplest and perhaps the best single measure that can be employed. It is obvious, also, that to be one of the first 10 producers in 1903 meant something less than to be one now. This is true both absolutely and relatively. The median producer in 1903 made barely 200 cars a year; the leading producer made only 4,000. The tenth producer in that year, in a list totaling 24 firms, stood only slightly above the median of the series. In the years that followed, however, the number of firms increased. In 1910, the tenth producer stood at about the first quartile; in the years 1909-1916, in general, roughly midway between the top firm and the first quartile; in 1921, at about the first decile; and in 1924 somewhat higher still. Because of the character of the data for the years since 1916, however, only the first 10 firms in any year have been here considered.

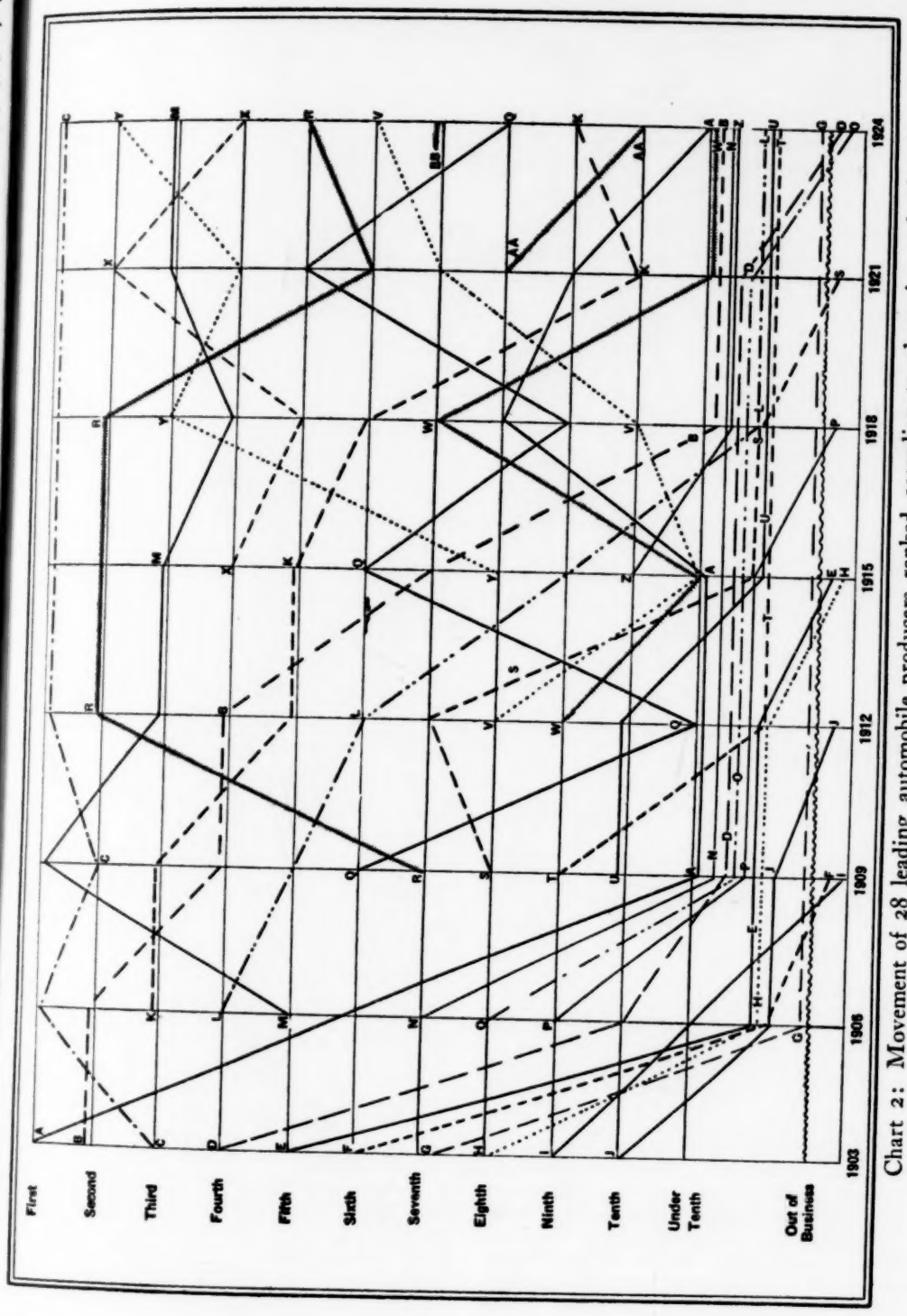

Chart 2: Movement of 28 leading automobile producers ranked according to places in production. *(See text for explanation.)*

of battle. *Only two firms other than Producer C have ever occupied the same relative positions at any two successive three-year intervals.*[6]

While virtually no firms have retained exactly the same ranks from one time to another, some companies have, however, maintained a much greater relative stability of position than have others. Observe, for example, producers C and M. But examine also the extreme oscillations of producers Q, R, and V, and the brilliant climb made by producer Y, within a ten-year period. And note that such producers as N and W, who both entered after 1903, occupied high places in 1906 and 1912, respectively, and now for many years have been members of the "under tenth" group.

Mark also the total number of quondam above-tenth-place producers continuing in production, as compared with the number who have gone out of business entirely. Nine have withdrawn or failed; 8 remain, but in the "under tenth" category.

V. Causes of Changes in Leadership

Of the 10 original leaders in 1903, only one today remains a leader in production. What percentage of those who were leaders at one or more of the three-year intervals subsequent to 1903 remain in this group in 1924?

As the gap towards the year 1924 narrows, there is a steady increase in this percentage. Of those who occupied tenth place or above in

1903—1/10	now	remain	in	tenth	place	or	higher
1906—3/10	"	"	"	"	"	"	"
1909—5/10	"	"	"	"	"	"	"
1912—5/10	"	"	"	"	"	"	"
1915—7/10	"	"	"	"	"	"	"
1918—8/10	"	"	"	"	"	"	"

Of the 10 leading firms in 1924, only two have been in the industry less than 10 years. But while nearly all of these leading firms are seasoned producers in the sense of being a decade old or more, only three of them started before 1908-1909. In other words, although few firms organized within the last decade have sprung into the forefront, most of the present leaders are not strictly pioneer companies; they date back only about a decade and a half.

The history of these leading companies which are not "pioneer" organizations in the sense of having been started by 1903, or even by 1906, reveals, however, the fact that every one of them has been organized by men who had earlier been engaged in the automobile business. And, with but one exception, all of the men who headed these concerns had enjoyed not only automobile experience, but automobile *manufacturing* experience before they started their own ventures. Many of them—a surprisingly large number—had been associated with that pioneer exponent of quantity production, R. E. Olds, in the Olds Motor Works, between 1898 and 1903, at Detroit and Lansing.[7]

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[6] There is in this melee, it would seem evident, no such thing as the "representative firm" depicted in economic theory as "holding its position year by year," typifying the bulk of the establishments in an industry or trade. Whatever the validity of the concepts for certain well-matured and more or less staple trades, clearly neither "normal value" nor the "representative producer" is to be found in a developing and expanding industry such as automobile manufacture, not even over a period of 22 years of its history.

[7] Howard Coffin, R. D. Chapin, and R. B. Jackson, all officials of the present Hudson Company; C. D. Hastings, of Hupp; A. Z. Mitchell, of Dodge Brothers; William E. Metzger and B. F. Everitt, of Everitt-Metzger-Flanders; Charles B. King, of the King Company; John D. Maxwell, of Maxwell-Briscoe—these are some of the men who early were connected in one manner or another with the Olds organization.

Others of the 1924 leaders were also once connected with pioneer firms. Thus, the Dodge brothers had made parts for Olds and motors for Ford since about 1900 and 1909, respectively. Indeed, they already not only possessed a well-equipped plant, but had acquired such a reputation in the trade by 1914 that, following the announcement in that year of their plan to build and market a car of their own, over a thousand dealers throughout the country actually applied for the sales franchise before even a sample car was ready for display. W. C. Durant and some associates, who started the Chevrolet Motor Company in 1913, had previously been executives of the General Motors and other companies. Similarly, the present Nash concern is not only the descendant of the old Jeffrey company, but its head was at one time president of the Buick company and later of General Motors. It is thus important to note that the successful units organized since 1908-1909, while not pioneer organizations, have all been piloted by pioneer manufacturers.

This helps to explain the success of many of the industry's present leaders; but how explain the demise of those who led in 1903? On *a priori* grounds, it may perhaps be said that the producers who are the first in an industry will not all succeed because the qualities required for innovation differ from those required for continued commercial success. Those men who are first to sense the significance of new mechanical devices, like the inventors of the new contrivances themselves, may often not be possessed of "practical" ability. Certain of those who pioneer in any field, though of great service in their day, may, through having become accustomed to methods and tactics which they themselves have developed, be loath to give up those once successful ideas in favor of methods later devised by new and bolder minds.

There is doubtless much truth in this generalization. But it is possible to point out a far more specific application of this general reasoning. Most of the 1903 leaders who in later years either fell below tenth place, or else went out of business entirely, failed to sense certain changes which shortly took place in market demand. Their products were well made and often striking in appearance, but the consuming public soon called for comparatively small quantities of vehicles such as they produced. To make clear just what it was that occurred, the history of passenger car design, briefly touched on in the preceding article, must here be reviewed.

Up to about 1904, many of the automobiles made were single- and two-cylinder vehicles. They were relatively light affairs, the chassis suggesting buggy, carriage, and bicycle practice rather than automotive design of the present-day character. Then came the steadily wider adoption of the four-cylinder motor. This involved making heavier and more powerful cars, which cost more to produce. The high-speed motor, of small bore but great power, had not yet made its appearance; and added size and weight were called upon to furnish the desired performance. The consumption of automobiles, however, still depended chiefly upon the well-to-do classes of the community. A market existed, therefore, for the higher-priced, more powerful cars. This market was served, and served upon a scale both absolutely and proportionately large, from about 1904 to about 1909.[8]

[8] Consult Charts 4 and 5 of the preceding article.

The demand for heavy, powerful cars, however, ran to extremes; indeed, some veritable monstrosities of shape and size soon appeared. An interview with the sales manager of the Packard company by a representative of a trade paper in 1905 is reported as follows:

> Of the tendencies of the times, Mr. Waldon said it was unmistakably for higher-powered cars, incidentally letting fall the information that his company probably would be forced next year to build some 60- and 90-horsepower machines in response to it, but predicting at the same time a reaction to normal powers and weights when the user got tired of colossal tire bills and the natural expense incidental to the operating of giant cars. The "disease," as Mr. Waldon termed it, had, in his opinion, about 18 months yet to run.[9]

It turned out that the prediction of this sales manager was not far wrong. Just about two months later, the trend in question began to reverse itself, although it took about six years all told before cars selling at $2,275 or above numbered less than 10% of all automobiles purchased. In 1905, however, such comparatively high-priced vehicles had constituted more than 30% of all sales.

After 1909-1910, four-cylinder cars not only had come firmly to be established as the standard type, but lighter ones were made. The development of improved designs and new methods of production enabled good four-cylinder automobiles to be turned out at lower costs. The demand for heavy, expensive cars ceased to grow, while that for the lighter, cheaper vehicles kept on expanding at an enormous rate.[10] Yet, in the face of these steady changes in market trends, 8 of the 10 firms which had led the industry in 1903 continued to produce the heavy cars which they had brought out in response to the market's demands in 1904-1905. The craze on the part of consumers for stupendous weights and powers lasted but a few years; but the production policies which it had brought into being were continued after it subsided.

Four of the eight firms made large models which were excessively heavy and cumbersome. All four soon dropped from their leading positions. Eventually, three of them withdrew from the field. The fourth firm still continues to produce with substantial success, but has, of late, concentrated its energies upon a lighter type of chassis.

Only three of these eight producers ever once attempted to market any model which sold at under $2,500, and the lighter models which they did bring out about 1913-1914 constituted quite subsidiary parts of their lines. Thus all of these eight producers faced the relative decline which took place in the market for medium- and high-priced cars, and took no advantage whatever of the great expansion of the low-priced field which began to develop in 1910-1911. Yet, it should be repeated, nearly all of these eight firms manufactured quite excellent products, as standards in those days went. Their failure to sense market currents, rather than any lack of technical or manufacturing ability, accounts for their displacement as leaders.

VI. Conclusion

The conclusion to be drawn from this survey of industrial history over a 22-year period is apparent and has just been indicated. Manufacturing proficiency, though both essential to success and difficult of attainment, is of little

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[9] *Motor World,* May 11, 1905, p. 337.

[10] Consult, again, Charts 4 and 5 of the preceding article.

avail unless accompanied by sagacious market analysis. Supplying a product is but one side of manufacture in its full economic sense; suiting that product to the demands of the mass of its consumers is the complementary necessity without which industrial leadership cannot be long maintained. In no industry may the principle of balance, to employ Mr. A. W. Shaw's apt phrase, be ignored with impunity, and the automobile industry's history affords a striking illustration of the consequences which attend its neglect.

Nor is the drama embodied in this automotive setting yet done. As these lines are being written, the motor world is watching with keen expectancy the circumstances in which the two largest producers of automobiles now find themselves. I refer, of course, to Ford and Chevrolet. For 15 years, from 1908 to 1923, Ford was undisputed champion. During these 15 years the Ford company retained its laurels without making any basic change in the character of its product. But within the last few years another company, indeed more than one other company, has succeeded in supplying cars which, while also small and sturdy in construction, are of a different design in several important respects; and to these producers the market has turned. The Ford production is still an enormous one measured in absolute figures, but during the past four years the curve denoting its annual growth has virtually flattened out; and in 1924 and 1926, the Ford sales figures registered absolute decreases as compared with those of 1923 and 1925, respectively. The figure for 1926 stands at a lower level than that of any year since 1922.

It is not my purpose here to analyze at any great length this interesting contemporary development, although its detailed history would afford an excellent study in business policies. In part, both the comparative and the absolute loss of sales by the Ford company over the past few years is due to factors other than those involving just the design of its product. As pointed out in the previous article, the curve of total passenger car production for all makes taken together has evidenced some general tapering off tendency since about 1916. From one point of view, the much larger relative decline in Ford sales for the last few years constitutes in some measure merely one reflex of this general slackening in the rate of expansion. Also, and as a corollary of the general situation, the greatly increased number of used cars of all makes now on the market has undoubtedly affected Ford sales in substantial degree. Rather than buy a Ford, many persons with $350 to $600 to spend have purchased within the past two or three years the other types of used cars which have been available in large numbers, and in serviceable condition, at these low prices. Finally, in the list of extenuating circumstances affecting Ford sales may be mentioned the fact that the last two years have been a period of pronounced general prosperity, in which large volumes of trade, manufacture, and employment, and hence large incomes, have prompted a number of otherwise potential buyers of new Fords to spend an additional $150 or $200 and purchase the products of Chevrolet, Essex, or other companies instead.

Yet while all of these three factors—the general stabilization of the industry, the comparative plethora of used cars, and the recent high level of general prosperity—are important, they account for the Ford decline only in part. Clearly coupled with these external,

contracting factors has operated an internal cause: the design and construction of the Ford car itself. Since 1908, hardly an improvement in design has been made. Except for a vastly better quality of materials (which all makes of cars have enjoyed as the result of great advances in metallurgical science), the fourteen-millionth Model T Ford chassis, produced in 1926, was identically the same type of chassis as that which rolled out of the Piquette Street plant in 1908 when this model was first announced.[11]

It is true that this very policy underlay the astonishing success that has been Ford's; it is irrefutable that a policy of never-changing design but ever-lowering selling price resulted in productive economies of the greatest magnitude. But, like any single principle of action alone followed, such a policy can remain too fixed, can become too rigid and unyielding a part of a business creed. To make cars at low cost is one thing; to make cars that consumers want is another. There can be no doubt in the minds of most observers that many of the buyers of second-hand cars, and some of the buyers of the Chevrolet and the Essex, during the last two or three years would have bought the Ford instead, had only its design been different. Another type of transmission, other springs, other lesser details of construction—all of these things, it has been well known for several years, were desired by an increasingly large proportion of the automotive public. Yet the Ford company has paid no heed. Like the eight leaders of 1903 whose history was above discussed, Ford has persistently clung to a type of product from which consumers have been steadily turning away. With all willingness to grant credit for splendid and prolonged earlier achievements, one cannot but affirm that of late the all-important principle of balance, as between marketing and productive considerations, has here been disregarded. Whether or not the error can in this case yet be corrected must remain a matter for future observation.

[11] The few modifications effected in 1925 were so slight that they hardly warrant discussion.

TWO TYPES OF INDUSTRIAL RESEARCH[1]

By MAX FREYD

TWO techniques are in use today in business research. Apparently because they have so much in common, the tendency is to ignore or overlook their differences. In the interests of progress in commercial and industrial research, we ought to pause and consider the relative values and disadvantages of the two techniques.

Because names are necessary, let us call one technique the *experimental* and the other the *statistical*. Although these names are not absolutely correct, they are the most satisfactory of any in current use.

Both techniques are well illustrated in recent studies by members of the Personnel Research Federation bearing on labor stability. The *statistical* method was used by Grace E. Manson in her exhaustive analysis of the relationship of age, schooling, previous experience, height, weight, and other items commonly found on application blanks to the success of 4,178 life insurance salesmen.[2] The recent work of L. J. O'Rourke, of the United States Civil Service Commission, in improving examinations for postal clerks,[3] and of Millicent Pond, in devising employee placement tests at the Scovill Manufacturing Company,[4] are good examples of the *experimental* technique.

President Suzzallo, of the University of Washington, once made a concise statement of the essentials of the two methods: "In experimental inquiry, one arranges and simplifies the situation itself; in statistical inquiry, one takes a complex situation and arranges and controls the observations so that simplified and significant relations are revealed."[5]

In other words, in statistical inquiry we are given data on industrial events and are required to make the most of our knowledge of mathematics; in experimental inquiry we are permitted to control the circumstances under which the events we study occur. The net results of one inquiry are statistics, of the other, experimental findings.

Each, it is true, uses mathematics to a greater or lesser degree. Each attempts to establish facts and relationships. Each has a legitimate place in business research. These similarities are generally appreciated in the commercial world, so much so as to lead to a practical identification of one technique with the other. But we find the differences to be perhaps as important as the similarities, once we list them.

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1. *The statistical method makes no attempt to interfere with the course of affairs, but studies events as they occur*

[1] Read at the Joint Meeting of the Personnel Research Federation and the American Statistical Association, New York City, October 8, 1926.

[2] Grace E. Manson, "What Can the Application Blank Tell?", *Journal of Personnel Research*, Vol. 4, July, 1925, pp. 73-99.

[3] L. J. O'Rourke, "Saving Dollars and Energy by Personnel Research," *Journal of Personnel Research*, Vol. 4, January-February, 1926, pp. 351-364, and March, 1926, pp. 433-450.

[4] Millicent Pond, "Selective Placement of Metal Workers," *Journal of Personnel Research*, Vol. 5, January, 1927, pp. 345-368.

[5] Henry Suzzallo, "The Mind of a Scholar," *Teachers College Record*, Vol. 27, February, 1926, p. 583.

in life or after they have occurred. Many important facts relating to movement of population have to be inferred statistically from the census because the government does not provide for assembly of this information by census takers. In the business world also, many inferences have to be made from figures not gathered for those specific purposes.

2. Where statistical relationships are being studied, mathematical correction—often very complex—must be made for factors which were not considered originally. An experimental set-up can reduce the mathematics and increase the reliability of the investigation by controlling the most important factors.

3. The conditions under which ordinary, uncontrolled events occur make statistical inquiry the equal of a badly planned experiment. A bungling investigator may discover, after his experiment is completed and he is ready to tabulate his findings, that his results are undermined by his lack of foresight in planning to control his variables, and that he has to make belated mathematical corrections. This same lack of planned control of the original data is characteristic of statistical inquiry.

4. Resort to statistical method is more necessary in psychology and the social sciences than in the physical sciences. Substances can be handled at will in the laboratory, but human beings cannot be handled so readily. Indeed, an investigator who could manipulate human beings as easily as physical substances would find his services in far greater demand elsewhere than in the laboratory. This complexity and variability of human behavior offers a challenge to psychology.

5. Statistical inquiry is somewhat less troublesome and costly than experimental inquiry. It takes less time than an experiment and makes no changes in routine.

6. Consequently, it is more popular in industry than experiment. Most large firms have a statistical department, or a research department devoted largely to statistical inquiry.

7. Since statistical inquiry deals with facts over which the statistician has no control, the results of such inquiry simply tend to confirm or disparage the practices which the industrial executive has held up to investigation. It must be admitted that it does not encourage invention or planful deviations in new directions.

8. Statistical inquiry deals with data which are usually closer to existing conditions than experimental data.

II

Now let us turn for a moment to the other type of research and consider briefly its outstanding features.

1. *Experimental inquiry controls the conditions under which the events it studies occur.* This control is exercised in order to discover the relationship between a few limited but important forces. Every firm with a national distribution of its products would be glad to know what its quota of sales should be for every region of the country and the reason it exceeds or falls short of this quota in various localities. Sales depend on quota of advertising expenditure, types of advertising media used, character of the wholesale outlets, type of competition, financial conditions in the locality, sales methods used, and type of salesman, to name only a few of the variables. Experimental technique would attempt to improve sales conditions by studying the effect of changing one variable at a time; for example, changing either the type of salesman or

the method of his training while maintaining the rest of the conditions the same. Thus the sales executive can find just where the trouble lies and make the necessary changes with a minimum of effort and expense. But it is not unusual in the business world to meet such a situation by changing salesmen, supervision, media, wholesalers, and the rest, at once. Such a method may increase sales, but it is impossible to say which of the changed conditions was responsible.

2. Because of its control of measurements, experimental inquiry generally leads to more exact and reliable findings than statistical inquiry.

3. As the experimental technique improves, the mathematics required decreases.

4. While experimental research requires less mathematics, it requires more skill in getting data. It requires foresight and ability to handle the objects of investigation and the instruments of measurement.

5. Experimental research in business ordinarily deals with physical and not psychological data. In time, this condition will change. Executives are realizing that the element of risk in all business judgments can be reduced by making adjustments to permit adequate check-up of events as they occur.

6. Experimental inquiry, it must be admitted, is an interference with events and often imposes unusual though necessary conditions.

III

Illustrations from my own experience show what the research worker encounters in each of these two types of inquiry. First, a statistical investigation.

A few years ago I had the opportunity to study the keyed returns on file in the offices of a large advertising agency.[6] For years this agency had kept careful records of the number of inquiries received or coupons returned from each of the keyed advertisements it prepared. With all these records at hand on dozens of firms covering a period of about eight years, I was in an exceptional position to study the relative pulling power of black and white pages, color pages, and back covers, in magazines. To compare a color page with a black and white page it was necessary, first, that the product advertised be the same, since it would not be justifiable to compare returns from an advertisement of a soap with one of a tooth paste; second, that the advertisements be used in the same campaign, as conditions change from year to year; third, that the type of offer be the same, that is, that conditions be identical as regards the offer of samples or the use of coupons; and fourth, that the same magazine be used for the two insertions to be compared. A number of unit comparisons were made in which the product, campaign, offer, and magazine were the same; then, since the unit comparisons involved different numbers of insertions, a corrected average was used in making the total comparison. Now, since two types of insertions entered into a unit comparison, and since one of these two was almost invariably a black and white page, each type of insertion had to be compared with the black and white page as a standard.

The results showed that the returns from advertising expenditures could be doubled by the use of the right type of insertion. The variations between results of different products indicated that it would be profitable to make an ex-

[6] "The Analysis of Keyed Returns," *Harvard Business Review*, Vol. 4, April, 1926, pp. 313-318.

perimental study for each product. An outline of such an experiment has been prepared which adds nothing to the cost of a campaign.

An experimental inquiry into one phase of merchandising offers a contrast.[7] The problem here was to find out the sales effect of a manufacturer's window display in drug stores. For this purpose a number of drug stores in New York City were selected, and arrangements were made to install the window display of a certain product in these stores for a period of two weeks. Through personal visits, weekly sales of the product at each of 56 stores were checked for four weeks before the display, during the period of the display, and for four weeks afterward. A curve of average weekly sales for all stores was drawn covering the period of ten weeks, and the exact effect of the display on sales was shown by the hump in the middle of the curve. A period had been chosen for study during which the general sales of the product were at a uniform level, so the results were not affected by seasonal demand.

A simple study in outline, but in execution it proved to be quite different from the previous one. The study of keyed returns was almost all a matter of figuring and was made at a desk, with occasional trips to the files. In the study of window displays, most of the investigator's time and energy were devoted to planning the experiment, convincing the druggists that this departure from custom would not harm them, and making the weekly rounds of the 56 stores. About 5% of the total time was devoted to mathematical handling of data and to writing the report.

[7] "The Experimental Evaluation of a Merchandising Unit," *Harvard Business Review*, Vol. 4, January, 1926, pp. 196-202.

IV

The personnel research worker, when allowed to control the circumstances under which events occur, is almost always limited to selective methods such as the use of employment tests. But even here the experimental method cannot flower unless the soil is right. A recent book on employment psychology gives a statement of the conditions necessary in order to carry out an experiment in vocational selection:

"1. *Does a problem of selection actually exist in this occupation?* Every scientific investigation aims to solve a problem. It may happen that the problem here defines itself concretely in the form of excessive labor turnover, low production, or costly breakage in one department. If no such definite and limited problems have been made obvious, but if the management wishes to raise the general level of efficiency in its employment department, then the investigator will find it advisable before he proceeds with the investigation to ask the cost department to help him find the job where increased efficiency in selecting employees would bring about the greatest economic saving.

"2. *Are there more applicants than jobs?* If the number of available applicants is less than the number of jobs that must be filled, then a research in selection is beside the point. Exceptions to this rule are found in those instances where greatly improved selection has decreased the number of employees required to do the work or has attracted to the employment window a larger and better group of applicants.

"3. *Are there enough employees doing the same kind of work to make possible a reliable study?* Scientific method demands a considerable number of cases for exactness of conclusions.

If only a few employees are doing the same sort of work, the findings of an investigation will have only a very low reliability when used to select from among future applicants.

"4. *Is there a valid and reliable criterion of success at this work?* Without some dependable indication of a man's actual success, it will be impossible to find out whether or not the proposed measurements of abilities distinguish between successful and unsuccessful employees.

"5. *Is the investigator assured of cooperation?* A reliable study is a practical impossibility without cooperation of both workers and management."[8]

A British scientist, in discussing the nature of data in industrial psychology in that country, says:

> The investigator cannot play about with factory conditions and alter them this way and that as he pleases in order to observe the effect of the alterations. All he can do is to take the records of factories A, B, C, etc., which happen to have altered their hours of work, and see what he can extract from those records. The investigator is back in the position of the "statistician" in the older sense of the term—he is limited to the simple observation, and there is precisely the same need that he should "think statistically" and use statistical methods with sense and skill.[9]

In the experimental study of methods of reducing labor turnover, some clean-cut experiments on the relative effectiveness of different training methods have been made, but the most common approach has been through employment tests. It is not necessary here to review the numerous test studies in which length of service was the criterion of success, or in which reduction of turnover was a by-product of the test research. But there is no reason why use of the experimental approach should be limited to the field of tests or of training methods. Beautiful studies are possible on the effect of wage payment plans and other incentives on labor turnover, which would involve even less disturbance to routine in management than experiment with employment tests. It is true that past events studied by statistical methods may lead to generalizations useful for predicting future labor stability, but it is equally true that a slight, experimentally controlled modification of events is likely to add reliability to the predictions out of all proportion to the cost of the experiment.

V

To summarize, then, the statistical type of inquiry has the advantages of unobtrusiveness, relative inexpensiveness, popularity as a method in business, and closeness to life and actuality. But overshadowing all these, the experimental method has the advantage that circumstances under which significant events occur are purposefully controlled, leading to more exact findings.

Both statistical and experimental research have a legitimate place in industry in satisfying the growing demand for facts. It is important for the research worker in placing facts before the executive to make clear the distinction between the two sorts of findings. If the research worker finds that he is limited in his attempts to obtain useful facts from the existing records of the firm, he can at least clarify his position and point out how these facts may be obtained if policies are carried out with a minimum of small variations.

[8] Walter Van Dyke Bingham and Max Freyd, *Procedures in Employment Psychology* (Chicago, A. W. Shaw Company, 1926), pp. 9-11.

[9] G. Udny Yule, *The Function of Statistical Method in Scientific Investigation.* Industrial Fatigue Research Board, Report No. 28, p. 4.

AN IRON PRODUCER AND THE BUSINESS CYCLE

By W. L. CRUM

FOR many years iron has been regarded as a "barometer of trade," and conditions in the iron and steel industry have been accepted as indicative of the general state of business.[1] The fact that iron and steel are the basic raw materials of many lines of manufacturing industry renders the output of these commodities peculiarly sensitive to actual and impending changes in general industrial activity. Moreover, although large-scale integration within the steel industry has served to give relative inflexibility to the price of steel products, the price of pig iron has continued to be strikingly responsive to fluctuations in business conditions.[2] It is to be expected, therefore, that the record of an individual plant producing pig iron will reveal clearly

[1] An elaborate study of the relations between business conditions and the iron and steel industry is presented in a recent book written by the present author, in collaboration with Homer B. Vanderblue: *The Iron Industry in Prosperity and Depression*, Chicago, A. W. Shaw Company, 1927.

[2] This responsiveness of pig-iron prices to business conditions is treated at length in *The Iron Industry*, mentioned above. See especially Chapters II and IV of that book.

TABLE I. ANNUAL PRODUCTION OF PIG IRON AT THE CAMBRIA WORKS, IN THE ENTIRE UNITED STATES, AND IN THE WESTERN PENNSYLVANIA DISTRICT

	Actual Production (Unit: 1,000 Gross Tons)			Per Cent Ratio of Cambria Output to	
	Cambria Works	Entire United States	Western Pennsylvania District	U. S.	W. Pa.
1902	556.2	17387	1013.1	3.20	54.9
1903	611.3	17426	1158.0	3.52	52.7
1904	529.5	16131	988.4	3.28	53.5
1905	655.2	22560	1254.1	2.91	52.3
1906	722.7	24791	1463.8	2.93	49.4
1907	729.7	25307	1523.2	2.90	47.9
1908	369.5	15620	857.8	2.37	43.1
1909	786.8	25397	1523.6	3.10	51.7
1910	806.9	26849	1491.3	3.01	54.1
1911	727.5	23326	1093.5	3.12	66.5
1912	972.8	29375	1652.9	3.31	58.8
1913	1006.2	30716	1784.1	3.26	56.1
1914	858.6	23050	1378.4	3.72	62.3
1915	1139.1	29661	1809.7	3.84	63.0
1916	1259.9	39025	2082.6	3.25	60.5
1917	1523.3	38185	2409.3	3.99	63.3
1918	1367.0	38506	2183.6	3.55	62.6
1919	677.2	30582	1413.9	2.23	47.9
1920	1109.1	36415	1934.3	3.05	57.4
1921	459.1	16544	779.2	2.78	59.0
1922	869.7	26881	1117.3	3.23	77.8
1923	1272.0	40059	2044.3	3.18	62.2
1924	909.2	31108	1285.0	2.92	70.7
1925	1114.9	36401	1348.4	3.06	82.6

Chart 1: Location of blast furnaces in the western portion of Pennsylvania on January 1, 1926, exclusive of furnaces in the Pittsburgh and Shenango (Sharon) districts. The furnaces shown constitute the "western Pennsylvania district."

the dips and peaks induced by the ebb and flow of general prosperity.

The present article examines the record of output for the Cambria plant of the Bethlehem Steel Corporation.[3] The Cambria blast furnaces are operated by an integrated steel-making organization which has its own supplies of fuel and ore, and carries the process of manufacture to the stage of turning out highly fabricated steel products. Moreover, the corporation has steel-making plants located alongside the Cambria blast furnaces and in direct physical contact therewith. Hence the Cambria furnaces must be classified as "steelworks" furnaces, rather than as "merchant" furnaces. Ordinarily, merchant furnaces produce chiefly foundry iron which is sold in the open market. Thus, according to the *Iron and Steel Works Directory* for 1926, all the twelve furnaces in the western Pennsylvania district other than the Cambria furnaces produce foundry iron, and all but one of these produce such iron exclusively for sale in the open market. The Cam-

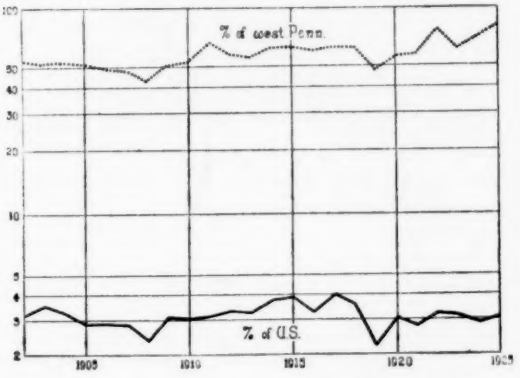


Chart 2: Percentage ratio of Cambria pig-iron output to that of the western Pennsylvania district and of the entire United States.

[3] The data for the Cambria plant were placed in our hands through the courtesy of the Bethlehem Steel Corporation, and their publication here is by permission of that company.

TABLE II. AVERAGE CONDITIONS, IN 1902-1907 AND IN 1919-1924

	1902–1907		1919–1924		Per Cent Increase, 1902–1907 to 1919–1924
	Average Monthly Production*	Per Cent of U. S. Total	Average Monthly Production*	Per Cent of U. S. Total	
Cambria Works	52.84	3.1	73.56	2.9	39
Entire United States	1717.	100	2522.	100	47
Western Pennsylvania District	102.8	6.0	119.1	4.7	16

*Unit: 1,000 gross tons.

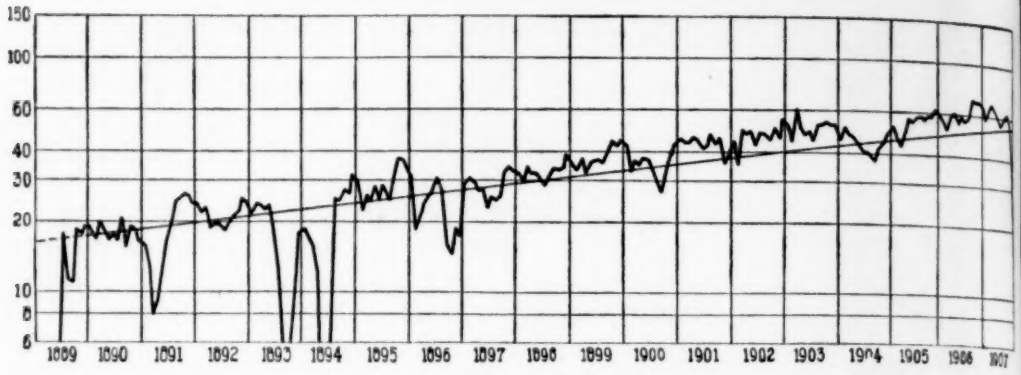


Chart 3: Actual monthly pig-iron output at the Cambria works (unit: 1,000 gross tons).

bria furnaces produce foundry iron, basic iron, and bessemer iron.[4] In any case, it should not be understood that the output of steel-works furnaces is never sold in the open market or, on the other hand, that steel works having their own blast furnaces never find occasion to secure supplies of iron in the open market. It is indeed these occasional entries of steel works—whether as buyers or sellers — into the open market for pig iron which renders that market so sensitive to conditions in the trade. In active times, however, the output of the steel-works furnaces is consumed by the parent company and is not sold.

The Cambria plant is located at Johnstown, about 60 miles east of Pittsburgh (see Chart 1) and is included in that group of furnaces designated by the *Iron Age* as the western Pennsylvania district. This district, which is somewhat less compact than many of the other producing districts, includes all the furnaces in the western por-

[4] According to the *Iron and Steel Works Directory* for 1926, the output of foundry and basic iron is "for sale and for own use," and the output of bessemer iron is "for own use only." In this connection, it should be noted that the output—whether foundry iron or other—of the twelve other furnaces in the western Pennsylvania district is "for sale" with the single exception that the foundry-iron product of the Kittanning furnace is "for sale and for own use."

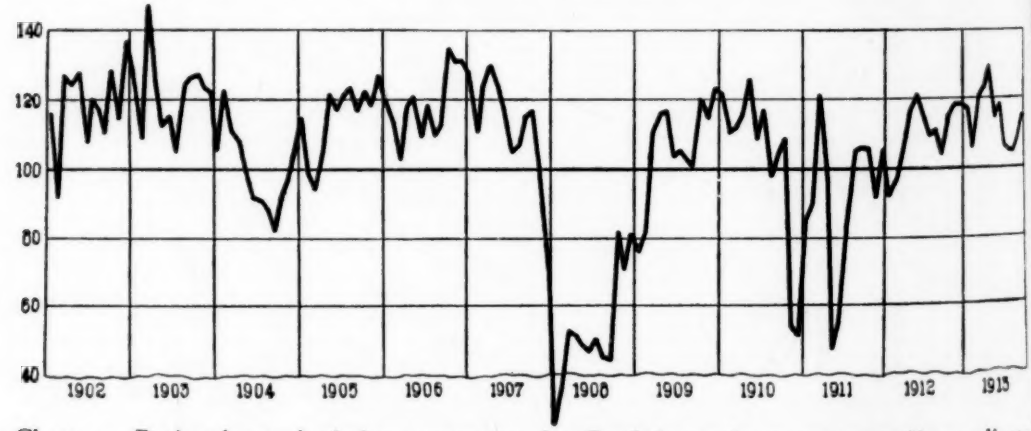


Chart 4: Ratio of actual pig-iron output at the Cambria works to corresponding ordinate of trend for each month.

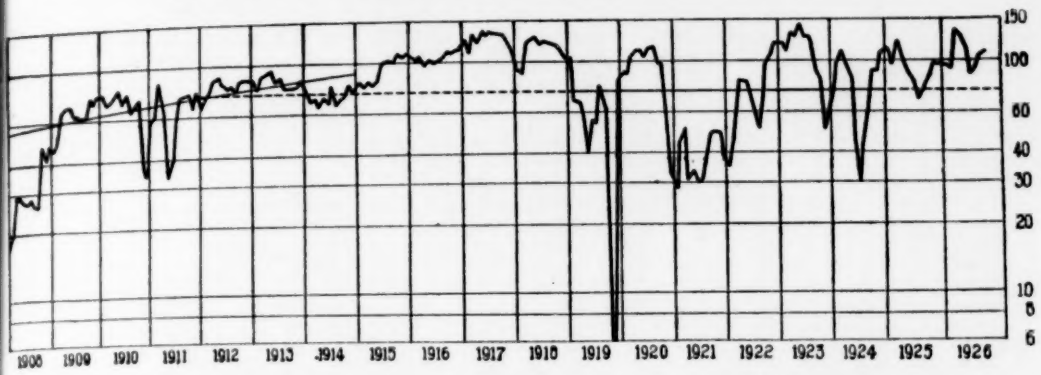


Chart 3 *(Continued)*: Actual monthly pig-iron output at the Cambria works.

tion of the state except those in the immediate Pittsburgh district and in the Beaver and Shenango valleys. It is clear from the dotted curve of Chart 2 (based upon Table I) that the Cambria plant has produced an increasing share of the district output during the last quarter-century. The other furnaces of the district are largely merchant producers, and it has been the general rule that merchant furnaces remain small while steel-works furnaces have been enlarged and modernized or replaced by entirely new and larger equipment.[5] The number of furnaces at the Cambria plant increased from 6 in 1901 to 9 in 1926, and the change in total annual capacity of output was from 650 thousand tons to 1,740 thousand tons. The number of other furnaces in the district decreased from 14 in 1901 to 12 in 1926, and the change in total annual output was from 656 thousand tons to 1,155 thousand tons. This growing relative importance of the Cambria furnaces in the western Pennsylvania district should be kept in mind, especially in tracing relations between Cambria production and district production.

The solid curve of Chart 2 shows the portion of total pig-iron output in the United States which was produced by the Cambria works. On the whole, changes were slight and hardly significant, except that the considerable rise of the curve in the years 1908-1917 marks the results both of the efforts to

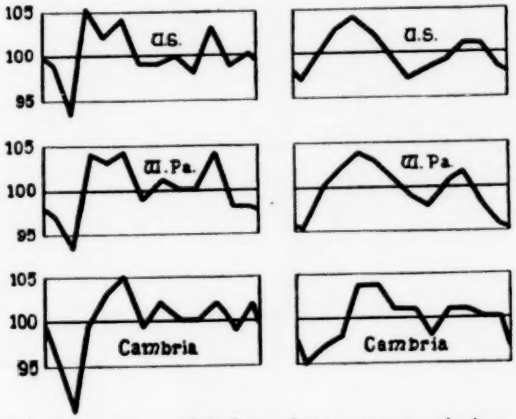


Chart 5: Seasonal indexes for aggregate pig-iron output (left) and after adjustment for length of month (right).

[5] Thus, on January 1, 1926, the average annual capacity of the Cambria furnaces was 193 thousand tons, while the average annual capacity of the other furnaces in the district was 96 thousand tons. At the beginning of 1901, both figures were somewhat smaller, but the relation between them was analogous. Thus, the average for the Cambria furnaces was 108 thousand tons and that for the other furnaces was 47 thousand tons. It appears that both groups of furnaces have increased in size, partly because of the rebuilding of the old plants and partly because of the erection of new stacks, during the last quarter-century; but the increase in the case of the Cambria plants has been greater than in the other cases. These data are taken from the *Iron and Steel Works Directory* for 1901, pages 198 and 221, and for 1926, page 418.

Table III. Actual Monthly Production of Pig Iron at the Cambria Works

(Unit: 10 gross tons)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1889	.....	.....	.....	.....	.....	430	1714	1106	1059	1803	1726	1858
1890	1879	1729	2002	1648	1762	1685	1737	2115	1573	1903	1874	1669
1891	1614	1308	805	934	1266	1666	2197	2450	2597	2697	2594	2360
1892	2382	2177	2292	1902	1968	1958	1834	1976	2106	2178	2529	2408
1893	2160	2388	2346	2221	2350	1940	1279	684	100	651	1190	1815
1894	1868	1739	1588	1230	17	.....	868	2536	2459	2751	2604	3195
1895	2949	2218	2615	2465	2735	2544	2762	2969	3078	3782	3655	3325
1896	3111	1880	2164	2433	2543	2707	3055	2672	1570	1463	1889	1762
1897	2918	3090	2979	2701	2744	2292	2596	2497	2643	3224	3402	3254
1898	3232	3009	3452	3163	3201	3016	2814	3108	3391	3285	3421	3845
1899	3540	3269	3735	3176	3561	3692	3728	3567	3993	4243	4132	4291
1900	4179	3223	3712	3503	3750	3714	3267	2980	2669	3406	3821	4181
1901	4418	4292	4253	4550	4463	4100	4208	4611	4210	4537	3579	3934
1902	4403	3492	4881	4761	4931	4215	4721	4606	4414	5084	4591	5521
1903	5228	4440	6030	5125	4671	4776	4402	5220	5334	5409	5254	5244
1904	4561	5284	4862	4726	4353	4101	4077	3948	3702	4168	4406	4766
1905	5260	4648	4374	4925	5677	5545	5735	5878	5647	5894	5719	6215
1906	5925	5625	5150	5879	6077	5569	5998	5637	5816	6975	6794	6831
1907	6745	5850	6587	6926	6648	6290	5687	5858	6338	6456	5661	3930
1908	1648	1995	2972	2904	2757	2709	2891	2649	2614	4811	4191	4813
1909	4547	4946	6728	7059	7144	6443	6477	6366	6327	7566	7269	7804
1910	7815	7096	7278	7535	8197	7189	7742	6486	6962	7310	3639	3438
1911	5807	6193	8398	6579	3246	3870	5774	7438	7556	7630	6610	7649
1912	6718	7057	7755	8621	8879	8389	8094	8182	7674	8486	8720	8699
1913	8606	7774	8897	9056	9467	8497	8706	7828	7705	7705	7939	8439
1914	7465	6861	7018	6461	7049	6703	7968	6755	7015	7155	7964	7444
1915	8114	7908	8247	7851	8299	9728	10490	10671	10223	10901	10556	10921
1916	10644	10268	10655	9661	10117	9805	10092	10293	11053	10949	11214	11236
1917	12518	10997	13178	12133	13481	13192	13512	13301	13244	13148	12270	11356
1918	9167	8872	12096	12406	12943	11974	12373	12097	11966	11738	10868	10201
1919	10197	6733	6542	5796	3962	5496	5306	7680	6239	.....	1727	8041
1920	8998	8716	10551	11033	11015	10458	11397	11515	9855	9500	4561	3314
1921	2711	4336	5011	3064	3265	3003	3017	3322	4746	4868	4819	3752
1922	3282	4268	6872	8094	8000	7041	5909	4975	6762	9556	10304	11910
1923	11910	11046	13027	12792	14001	12706	12737	11778	8640	8373	4831	5360
1924	7106	9689	10396	9538	8249	4294	2836	4472	5929	8891	8819	10702
1925	11006	9877	11655	10052	8714	8357	6884	7075	8239	9962	9885	9784
1926	9765	9427	13167	12233	10873	8941	9448	10265	10592	.....	.....	.....

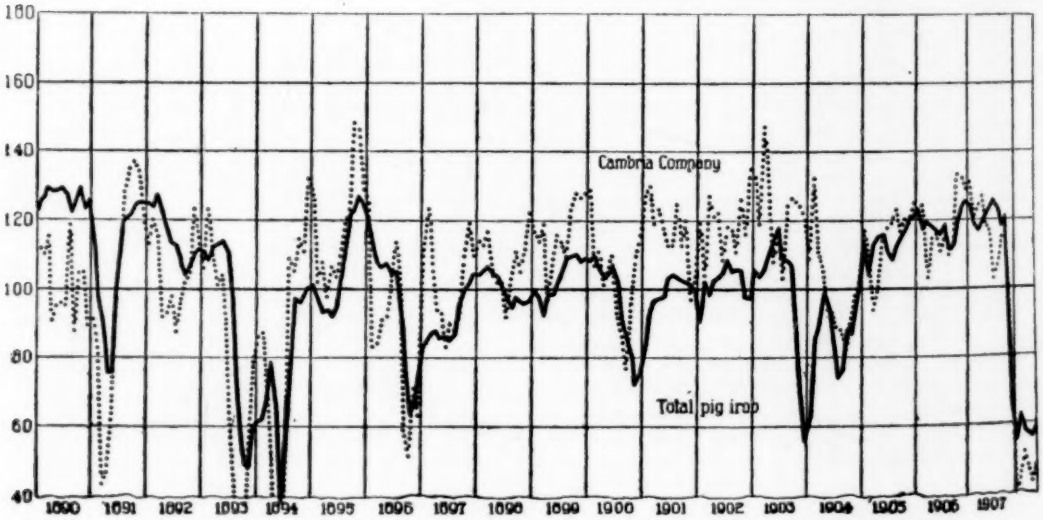


Chart 6: Cycles of pig-iron output, for the Cambria works and for the entire United States.

TABLE IV. MONTHLY PRODUCTION OF PIG IRON AT THE CAMBRIA WORKS, EXPRESSED AS PERCENTAGES OF THE LONG-TIME NORMAL, AND CORRECTED FOR SEASONAL VARIATION

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1889	.....	.....	.....	.....	.....	27	101	66	63	65	65	66
1890	112	110	115	91	95	96	95	118	87	104	104	89
1891	91	81	43	47	62	89	113	128	135	137	134	119
1892	113	120	115	92	93	98	88	97	102	105	123	113
1893	106	123	110	101	104	91	57	31	5	28	55	79
1894	86	87	70	51	0	0	35	109	105	115	111	132
1895	126	102	108	98	107	104	110	119	123	148	146	129
1896	125	83	84	91	92	104	114	101	59	52	71	63
1897	110	123	108	94	93	83	90	88	93	110	119	110
1898	114	113	117	104	102	102	92	103	111	105	112	122
1899	117	114	119	97	107	116	114	110	123	128	127	128
1900	129	107	111	101	105	110	93	86	77	96	110	116
1901	127	130	119	123	118	113	113	125	113	120	97	102
1902	119	102	127	121	122	109	118	117	111	126	116	135
1903	132	119	147	122	108	116	103	124	126	125	124	120
1904	109	132	111	105	94	93	89	88	82	90	98	102
1905	117	110	94	102	116	118	119	123	117	120	119	125
1906	123	124	103	115	116	111	116	110	113	133	132	129
1907	131	121	124	127	119	117	103	107	115	115	101	68
1908	32	46	52	48	43	48	48	45	44	80	72	79
1909	79	92	111	113	112	105	103	102	101	118	116	121
1910	119	121	112	113	121	110	115	98	104	107	55	49
1911	88	100	121	92	42	56	80	105	106	104	93	103
1912	95	106	105	114	116	115	108	111	104	113	119	116
1913	120	116	121	120	124	116	116	106	105	103	109	113
1914	104	103	95	85	91	92	106	92	95	95	109	99
1915	113	118	112	104	108	133	140	145	139	146	144	146
1916	148	149	145	128	132	134	135	140	150	147	153	151
1917	173	160	179	162	178	180	182	181	180	177	168	152
1918	128	131	164	166	171	164	166	164	163	157	149	137
1919	142	101	89	76	49	76	70	104	85	0	24	107
1920	125	128	143	147	145	143	153	156	134	127	63	43
1921	40	69	68	39	39	42	39	45	65	64	67	49
1922	48	68	93	107	104	97	78	68	91	128	141	160
1923	165	160	177	171	185	174	171	160	117	112	67	71
1924	100	142	141	127	107	59	37	61	80	119	121	143
1925	153	144	158	134	113	115	92	96	112	133	135	131
1926	136	138	179	163	143	123	126	140	144	.....	.....	.....

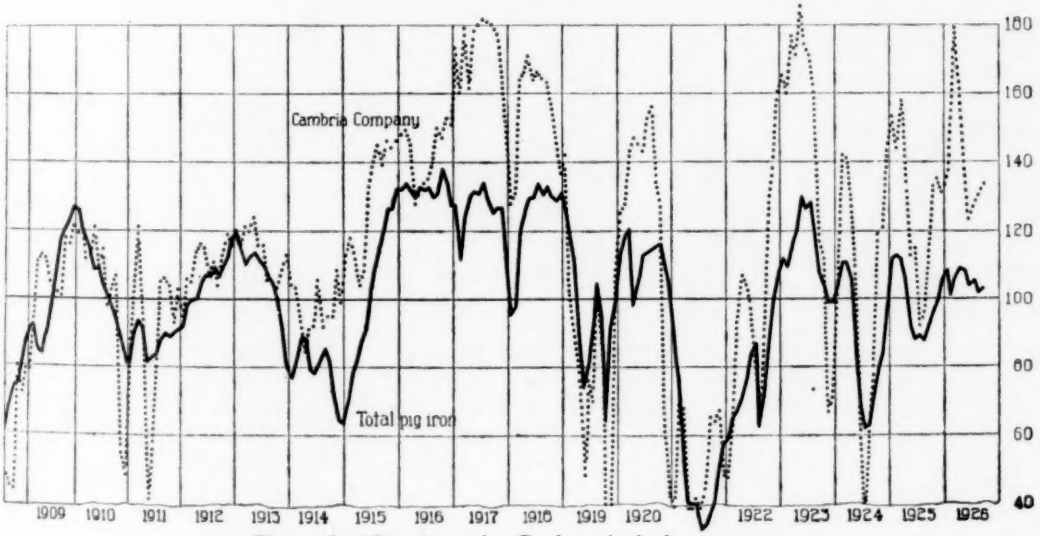


Chart 6 *(Continued)*: Cycles of pig-iron output.

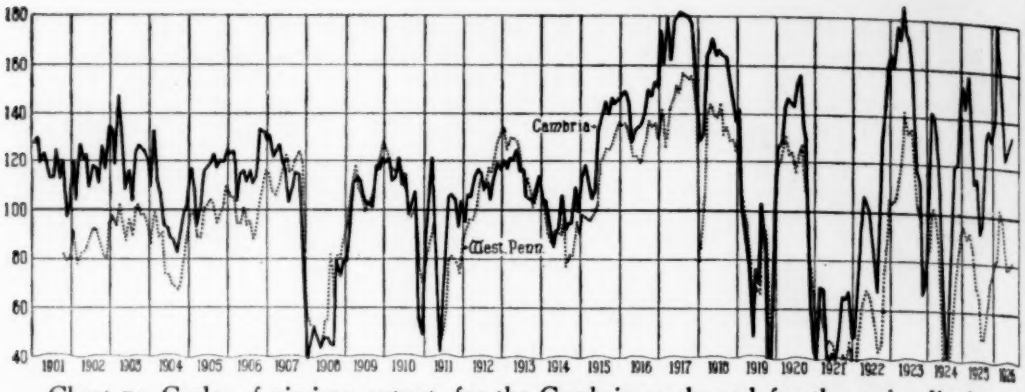


Chart 7: Cycles of pig-iron output, for the Cambria works and for the entire district.

modernize the Cambria furnaces and of the addition of new stacks, especially during the war period. Table II shows the changes in output between 1902-1907 and 1919-1924 for the entire United States, the western Pennsylvania district, and the Cambria works. Each of these two 6-year intervals comprises substantially two complete cycles of iron production, and averages for these intervals are unlikely, therefore, to be seriously influenced by variations in general business conditions. It is evident that the portion of total United States output contributed by the district declined considerably more during the quarter-century than the portion contributed by the Cambria works. This observation confirms the remarks above concerning the declining relative importance of the merchant furnaces of the district.

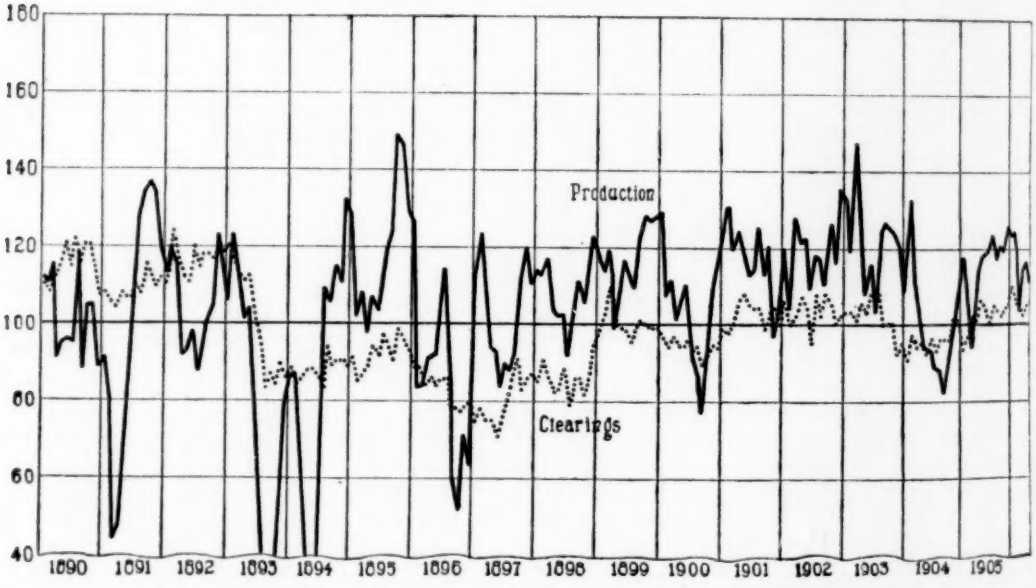


Chart 8: Cycles of pig-iron output at the Cambria works and cycles of bank clearings (debits, beginning with 1919) outside New York City.*

*Clearings for seven selected cities through 1902 (see *Review of Economic Statistics*, Vol. 7, p. 252), for all cities outside New York from 1903 to 1914 (see *Review of Economic Statistics*, Vol. 7, p. 220). Debits corrected for trend as described in *Review of Economic Statistics*, Vol. 8, p. 66.

Chart 3 (based on the data of Table III) shows the actual monthly record of output by the Cambria furnaces since 1889. Except for rather brief dips occasioned by business depressions, the monthly output of the Cambria plant rose steadily until 1918. During the years since the war there has been no evidence of further increase in output; in fact, production appears to have fluctuated about a fairly constant level since 1912. The long-time tendency toward increase, apparent from 1889 to 1918, reflects the secular trend of Cambria output. To facilitate comparison of cyclical fluctuations in Cambria output with other curves of cycles, the secular (long-time) trend needs to be removed.[6] As the trend appears to be represented by the inclined straight line on Chart 3, and as that chart is plotted on a ratio scale, the pre-war trend is of the compound-interest type. This trend, for the interval 1890-1914, was determined and eliminated in the usual way.[7] As the trend from 1912 on appears to have been horizontal, an assumed normal — 73,560 gross tons, the average monthly output, 1919-1924 —was taken for the interval beginning March, 1912. The ratio of each actual item to this assumed normal was com-

[6] The author is indebted to W. F. Maxwell, of the staff of the Harvard Economic Service, for assistance in correcting this series for trend and seasonal variation. Assistance in the interpretation of the data and the results of analysis was given by Professor Homer B. Vanderblue, Director of that Service.

[7] The actual determination comprised fitting a straight line, by the method of least squares, to the logarithms of the annual average production 1890-1914. The ordinate of this line, for each month from July, 1889, to December, 1914, could then be found; and the antilogarithm of this ordinate was the desired ordinate of the compound-interest curve. Division of the actual monthly output in the particular month by this compound-interest ordinate eliminated the secular trend. The resulting "ratios of actual output to normal trend," for the interval 1902-1914, appear in Chart 4.

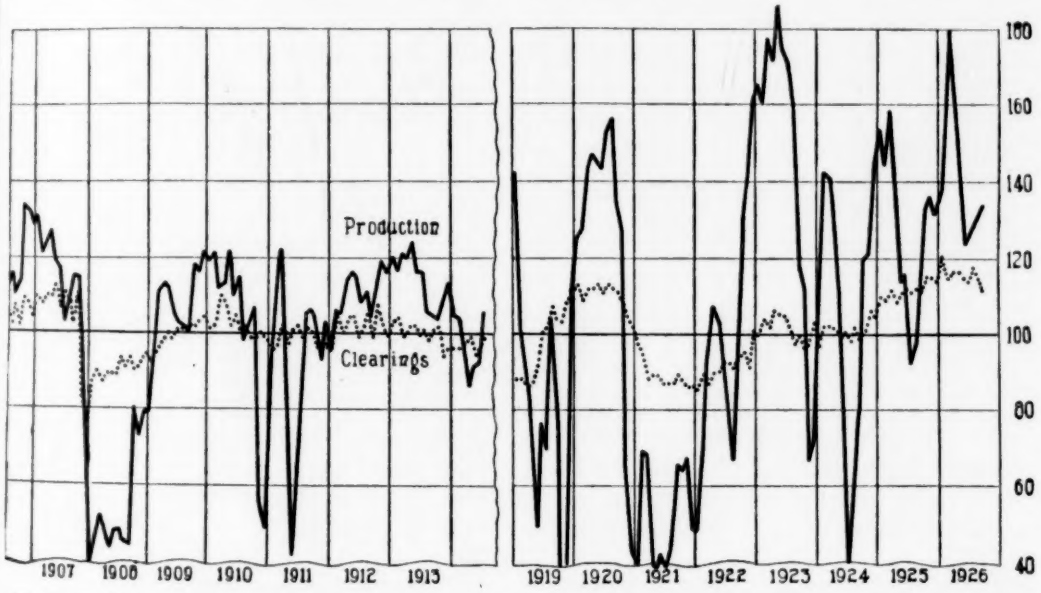


Chart 8 *(Continued)*: Cycles of pig-iron output at the Cambria works and cycles of bank clearings (debits, beginning with 1919) outside New York City.*

*Clearings for seven selected cities through 1902 (see *Review of Economic Statistics*, Vol. 7, p. 252), for all cities outside New York from 1903 to 1914 (see *Review of Economic Statistics*, Vol. 7, p. 220). Debits corrected for trend as described in *Review of Economic Statistics*, Vol. 8, p. 66.

puted; and these results, with the ratios found for the earlier interval, show the record of Cambria output "with trend eliminated."

There is some evidence, in both Chart 3 and Chart 4, of a seasonal swing with moderate peaks in the spring and autumn. Although this seasonal movement is not heavy, its presence is not surprising, for iron production shows month-to-month variations due to lack of uniformity in the length of the month and to causes more truly "seasonal." This annual swing, therefore, was measured and eliminated.[8] The seasonal swing, together with the corresponding indexes for the entire United States and the western Pennsylvania district, appears in Chart 5 (left side). On the right side of Chart 5 are shown the same seasonal movements with corrections to eliminate the effect of non-uniform length of month. The fairly close similarity between the three seasonal movements is evident from either side of the chart.

The "ratios of actual output to normal" were next corrected for seasonal movement by means of the seasonal indexes found above. The results, appearing in the dotted curve of Chart 6, show the cyclical fluctuations in Cambria output (Table IV). The solid curve of Chart 6 shows corresponding cycles in total pig-iron output in the United States.[9] It is evident that, in all their main movements, the two curves fluctuate very closely together. The Cambria curve recovered more vigorously in the middle of 1896 and early 1897 than did the general curve, and it escaped the sharp and severe recession in general output at the beginning of 1904. In early 1910 and late 1913, the Cambria curve held up rather better than the general curve, but the strikes of late 1919 seem to have interrupted Cambria production altogether. These points of difference are minor, however, and the principal cyclical fluctuations appear at like times and in like intensities in both curves.

Chart 7 shows Cambria production cycles in comparison with corresponding cycles for the entire western Pennsylvania district. The greater intensity of the district cycles, particularly in the earlier years, reflects the presence of merchant furnaces. The disappearance of this disparity in intensity during the later years marks the growing dominance, noted above, of Cambria production in the district output.

In Chart 8, Cambria production cycles are compared with corresponding cycles in general business activity as reflected by an index of bank clearings (bank debits, following the war) outside New York City.[10] As might be expected, the similarity is very close. It is well known that pig-iron production in the entire United States fluctuates in close sympathy with general business activity. As Cambria production moves closely with total production (Chart 6), it is not surprising that Cambria production responds accurately to changes in general activity. It is evident, then, that a blast-furnace plant, even though operated in connection with steel works and not serving the open market for pig iron, is very sensitive in its operations to changing business conditions.

[8] Professor Persons' median-link-relative method was used, and the computations were based upon the interval 1903-1914.

[9] *Review of Economic Statistics*, Vol. 7, p. 45.

[10] See *Review of Economic Statistics*, Vol. 7, p. 252 and Vol. 8, p. 66, for discussion of this index.

BUILDING CONSTRUCTION IN RECENT YEARS

By JOSEPH B. HUBBARD

I

THE prosperity of the United States in recent years has probably been exhibited most strikingly by the automobile and construction industries. Indeed, the expansion of these two industries has gone hand in hand, since the automobile (in addition to necessitating garage construction) has facilitated the suburban growth which has been such a marked feature in the building situation. Apparently the public, instead of making a choice between these two modes of expenditure, has chosen both; and fluctuations in automobile production and in construction projects have shown a pronounced similarity ever since the depression of 1920-21.[1] A similar parallel may be observed between the volume of building and stock prices, and this is perhaps the more significant of the two, since (if we omit the war years) a high degree of similarity appears, as far back as 1903, between the movements in the stock market and changes in building volumes.[2] Stock prices and building both respond, in much the same way, to the influence of the abundance or deficiency of funds seeking investment and to the favorable or unfavorable aspect of the business situation.

Both the shortage of building accommodation created by the war and the generally prosperous conditions of business in recent years have contributed to the long-sustained period of active construction. The first of these gave the initial impetus to the expansion; it accounts for the very prompt upturn in building volumes after the 1920 depression—an upturn which began early in 1921, when general business was still depressed. Just when the shortage ceased to furnish a stimulus to construction expansion generally cannot be definitely stated and probably must remain a matter of individual opinion; certainly the problem is not one (at least at present) subject to statistical determination. Published opinion on this point, however, does not now vary widely. W. C. Clark, economist of S. W. Straus and Company, places the date toward the end of 1925,[3] while William J. Moore, president of the American Bond and Mortgage Company, places it at the beginning of 1925.[4] On July 18, 1925, the Harvard Economic Service stated that there was no longer a general building shortage.[5]

Whatever date may be assigned to the disappearance of the shortage generally, it is clear that the business situation, as early as 1923, had developed characteristics peculiarly favorable to building. Business conditions had then

[1] See chart published in the *Survey of Current Business* of the Department of Commerce, January, 1927, p. 8.

[2] *Review of Economic Statistics*, January, 1924, pp. 39-41; *Weekly Letter*, Harvard Economic Service, November 21, 1925, p. 353.

[3] *Review of Economic Statistics*, January, 1926, p. 50.

[4] *Commercial and Financial Chronicle*, January 1, 1927, p. 25.

[5] *Weekly Letter*, p. 217.

become generally prosperous, and this prosperity, despite a number of brief recessions, has subsequently been well maintained. Since the spring of 1924, moreover, it has been accompanied by a persistently easy money market. Prosperous business and easy money—and not the previous building shortage—account for the large construction volumes of the past year or two, and there are now no indications that these conditions will change drastically in the near future. For this reason, although a moderation of the pace is already evident for some types of building, a sharp curtailment is not likely to occur in the immediate future.

II

The statistics of building activity do not relate to construction actually under way, but to the issuance of building permits or to the letting of building and engineering contracts. The figures for permits are given out monthly by the building departments of the various cities, and summaries are published in a number of magazines and trade journals. These figures relate only to buildings within municipal limits, and the list of cities for which figures may be obtained—at least, for a satisfactory number of years—is restricted to cities of some size. In general, permits are not required for structures other than buildings (thus excluding roads), or, in many cities, for buildings constructed for the United States Government and other governmental bodies. For certain cities (New York among them), the figures reported are not for permits but for plans filed with the building department. The valuations for building permits (or plans filed) are those attached to the buildings by the municipal authorities.

Statistics on contracts awarded are collected by the F. W. Dodge Corporation and the *Engineering News Record*. The figures of the former organization, which appear to be the more comprehensive, have been used in this article. They are not confined, as are the permits figures, to projects within municipal limits, although they do not cover the construction of ordinary farm buildings or other types of buildings erected singly at a cost of less than $5,000 each. In addition, they include contracts for structures other than buildings.[6] The Dodge reports now cover 37 states and the District of Columbia, practically all of the United States east of the Rocky Mountains.

The very large increase in building volumes in recent years is reflected by the data both of permits and of contracts. The accompanying table presents the value of permits, yearly, as compiled by the *Commercial and Financial Chronicle*, and the value of contracts awarded, as published by the F. W. Dodge Corporation. These data indicate that building activity has considerably more than doubled in the past six years.[7] The expansion in activity is also indicated by increases in the output of the principal building materials. Between 1921 (when production was, in general, depressed) and 1926, structural steel bookings more than doubled, cement increased approximately 66%, lumber, 50%, and face brick, 35%.

[6] For a comprehensive account of the types of structures covered by the Dodge figures, see Thomas S. Holden, *Building Contracts and Business Movements*, recently published by the F. W. Dodge Corporation, pp. 11-15.

[7] For the Dodge figures, the data for the years 1921 and 1926 (based upon the 27 northeastern states) are not strictly comparable, but the changes (described in Table 1) are not such as to invalidate the statement made above.

Neither the permit nor the contract figures, of course, purport to cover total construction; but we may take the Dodge estimate for the total value of contracts awarded in the United States as a whole in 1926—$6,870,000,000—to gain some idea of the importance which the building industry has come to assume. This figure is over 35% of the total interest-bearing debt of the United States; it is over 80% of the total estimated value of coal production in this country in 1926, about 75% as large as the total value of our foreign trade in that year, and slightly more than the total value of new securities (excluding refunding) issued.

III

In order to gain a clear idea of the fluctuations in the volume of building projects, it is necessary to use the monthly figures. These figures, however, are subject to a very pronounced systematic variation from month to month, based essentially upon the changes in weather conditions, but influenced by custom, practices as to leasing dates, and probably other factors as well. The seasonal movement takes the form of a sharp increase in the spring, followed by a more gradual decline to a minimum in the winter. It has also appeared, from an examination of the available data as far back as 1903, that there has been a gradual shifting for a number of years toward a slightly larger volume of building projects after the middle of the year (especially in the winter months) and toward a slightly smaller volume in the spring. In correcting the permit figures for seasonal variation, it has been possible to make an allowance for this drift by using not fixed, but progessively changing seasonal indexes. That the extent of the change allowed for is small may be seen from Chart 1, which compares these indexes for (1) the last half of 1911 and the first half of 1912 with those for (2) the last half of 1925 and the first half of 1926. Although there appears to be a somewhat similar shifting in the contract figures, fluctuations in the data are not sufficiently regular over the period available (1910 to date) to make possible an allowance for this factor in correcting for seasonal movements. The seasonal correction which is used, however, since it is based on the months October, 1913, to September, 1926 (omitting the calendar year 1918), gives a fairly heavy weight to the experience of recent years, when winter building has been high.[8]

TABLE I. VALUE OF BUILDING PERMITS AND CONTRACTS AWARDED, 1919-1926
(Unit: $1,000,000)

DATE	PERMITS (310 Cities)*	CONTRACTS AWARDED†		
		27 Northeastern States‡	36 Eastern States§	37 Eastern States¶
1919	1,515	2,580	.....	.....
1920	1,634	2,565	.....	.....
1921	1,870	2,355	.....	.....
1922	2,808	2,344	.....	.....
1923	3,449	3,504‡	3,990	.....
1924	3,615	3,873	4,479	.....
1925	4,303	5,042	5,821	6,006
1926	3,987	5,387	6,118	6,350

* Compiled by the *Commercial and Financial Chronicle.*

† Compiled by the F. W. Dodge Corporation.

‡ Including to the end of 1922 the states of North and South Dakota, Iowa, the eastern half of Kansas, Missouri, Tennessee, South Carolina, and all states to the east and north. In 1923, North and South Carolina and Tennessee were transferred from the 27 states and added to the southeastern district (included in the 36 states), while Nebraska, Oklahoma and the western half of Kansas were added to the 27 northeastern states—changes which "very nearly balanced each other," according to the F. W. Dodge Corporation.

§ The 27 states (as prior to 1923) plus Nebraska, Kansas, Oklahoma, Arkansas, Louisiana, and states to the east.

¶ The 36 states plus Texas.

[8] For the methods and data used in the compilation of the seasonal indexes, see *Weekly Letter*, Harvard Economic Service, November 20, 1926, p. 325, footnote.

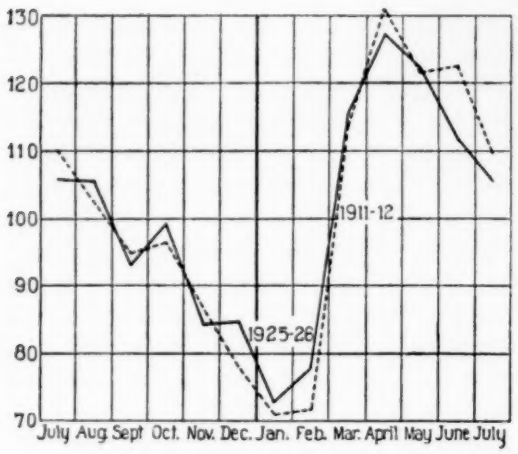


Chart 1: Building permits. Seasonal indexes for July, 1911, to July, 1912, compared with those for July, 1925, to July, 1926.

The shift of seasonal variation indicated by our figures is small, and the progressive modification of the seasonal indexes for permits may not adequately measure the results of recent efforts to stimulate winter building. The large current volume of construction has also given special stimulus to the utilization of productive capacity during the winter season, and only after an interval of relatively slack building can the permanence and extent of the change due to such efforts be judged. It had been early recognized that existing seasonal fluctuations in construction[9] were probably larger than the modern technique of building required. After President Harding's conference on unemployment in September, 1921, a committee was appointed by Secretary Hoover to investigate the problem. Their complete report was published in 1924 by the McGraw-Hill Book Company *(Seasonal Operation in the Construction Industries)*, and a summary was also issued by the Department of Commerce. This report drew the conclusion that it was feasible to maintain operations throughout the year at a much more constant level than had been usual.

The very size of the seasonal fluctuations in the figures for building projects and the rather frequent occurrence of pronounced irregularities render any measurement of seasonal variation less precise for these figures than for many other series. For this reason, the indexes appearing in Chart 2, which have been adjusted for seasonal variation, are presented on a bimonthly basis. Despite the general difficulty in making seasonal correction, and the fact that the recent agitation may have tended to raise slightly the position of the winter peaks shown on the chart, all supplementary evidence on the building situation supports the substantial accuracy of the corrected indexes in exhibiting the course of building in the past few years. The permits index is based on the value of permits for about 185 cities as reported currently in *Bradstreet's*. The contracts index is based on the F. W. Dodge Corporation figures for the 27 northeastern states.[10]

IV

We may divide the course of building activity during the past few years into two phases. The first of these (only partially shown on Chart 2) embraces the upswing from early in 1921 to the spring of 1923. This phase, until near its end, was without special incident. But the 1922-23 program of winter building in cities (as reflected in

[9] The seasonal variation in actual construction differs from that in contract lettings or the issuance of permits, the peak (which is less sharp) being reached later in the year; but the evidence now available indicates the amount of variation is not greatly different in extent from that shown by the figures for building projects.

[10] Acknowledgment is hereby made to the Harvard Economic Service for permission to use the two charts appearing above.

the permits index) was large compared with previous years, and the spring rise took place from a high level. Evidences of strain upon the productive capacity of the industry soon began to appear; costs advanced rapidly, and labor difficulties arose. It seemed clear that activity was exceeding conservative bounds, and as early as March Secretary Hoover advised that all but the most essential government work and public building should be deferred for the time being. Two months later, the governors of the American Construction Council recommended that new construction be postponed until later in the year. In certain other aspects, moreover, the general business situation at the time had come to be commonly regarded as threatening, and the Federal Reserve authorities were taking steps toward moderating expansion in business generally. The response of the construction industry to these developments is reflected in a sharp drop of the building indexes. By the end of July, 1923, conditions had been considerably relieved, building material prices had decreased substantially, and the cost of work thereafter initiated was somewhat lower.

With this episode, developments in the construction industry enter a second phase, characterized, on the one hand, by expanding volumes (if we except certain developments of the past calendar year, to be discussed later) and, on the other hand, by certain marked ups and downs. These intervals of recession and advance correspond closely to similar developments in the stock market and somewhat less closely to the alternating periods of reaction and expansion which were occurring in the general business situation.

The winter building program of 1923-24 exceeded that of the previous year, and building indexes rose substantially, as did also the prices of industrial stocks. But business showed, at the most, only a slight expansion at the end of 1923 and the beginning of 1924, and soon entered a period of recession. Stock prices had broken sharply in March, and a substantial drop in the indexes of building projects, ending slightly after the middle of 1924, accompanied the business recession. By

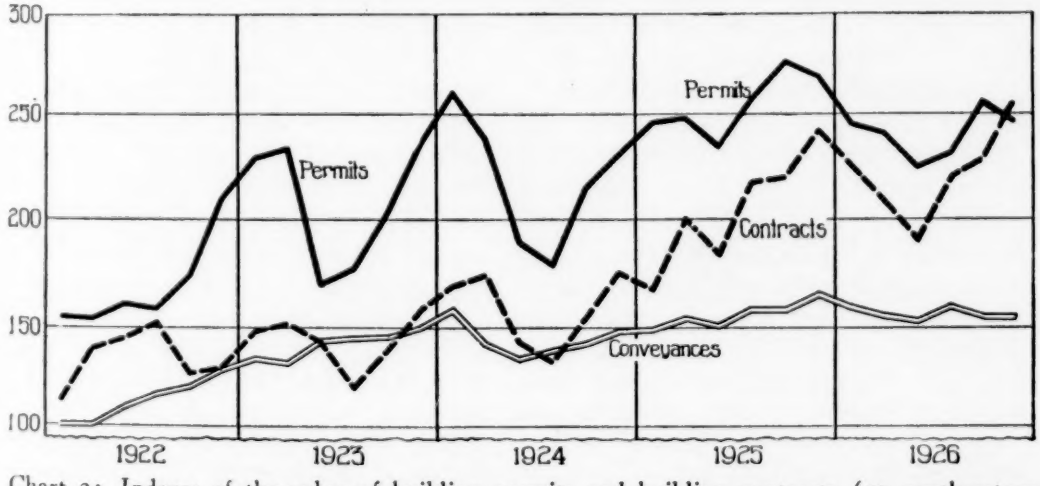


Chart 2: Indexes of the value of building permits and building contracts (27 northeastern states) and of the number of real-estate conveyances, 1922-1926. *(Bimonthly averages corrected for seasonal variation. Monthly average 1920-21 = 100.)*

this time industrial production in general was severely curtailed, and depressed conditions were evident in certain industries. Stock prices, on the other hand, had already begun to rise, and the stock market, business activity, and new building projects all shared in the uprush in the remaining months of 1924. In 1925, another "spring recession" made its appearance in business. The building indexes and stock prices reflected this in showing only a minor dip, however, and by the late fall and winter had again risen above the highest levels previously recorded.

In so far as building is concerned, the subsequent fluctuations have been like those in 1923 or 1924, but they furnish evidence that the surprising vigor which the building boom exhibited in its early stages is beginning to disappear. Thus, although our indexes of contracts at the end of last year rose above any previous peak and the total value of contracts awarded for the year as a whole was greater than for 1925, the total floor-space provided was less. Moreover, the most important single group among the classes into which the Dodge reports divide their statistics—namely, residential building—was also in smaller volume in 1926 than in 1925. Furthermore, the permits index, for the first calendar year since 1920, failed to rise above the highest point of the preceding year, and the total valuation of permits for the year as a whole was below that for 1925. From a consideration of these figures and of existing conditions in our cities today, it seems a fair conclusion that the peak of the boom, in so far as it relates to the construction of buildings in cities, is past, even though there now appears no reason to expect drastic curtailment.

With the indexes of the value of permits and contracts in Chart 2 there is shown also an index (adjusted for seasonal variation) of the number of real-estate transfers and conveyances in 41 cities of the United States, based upon data compiled by the National Association of Real Estate Boards and published by the Department of Commerce. Since the beginning of 1922, this index of real estate activity has not shown as wide fluctuations as have the indexes of new projects and it has not risen as far above the 1920-21 average as have these indexes. Except in 1923 (when it showed no appreciable recession), real estate activity has apparently fluctuated at about the same time, and in the same direction, as have building projects. Despite the recession shown by the indexes in the first half of 1926, the total number of conveyances in the 41 cities during the year exceeded slightly that during 1925.

V

Certain other aspects of the situation during the past few years remain to be noted. Thus, building costs, despite the large volume of construction, have displayed remarkable stability for over three years. Sharp advances had taken place in the last half of 1922 and the first five months of 1923, but this movement was checked in June of that year, and subsequent fluctuations have been small. From June 1, 1923, to the beginning of 1927, the M. C. Tuttle index of the costs of constructing a reinforced concrete factory building in New England has fluctuated between 199 and 208 (1914=100). Throughout the last nine months of 1926 the index remained unchanged, at 205½; it had risen to this figure (from 201 on March 1, 1926) because of an advance in wage rates. Wages have, in general, shown a rising tendency in recent years, while costs of raw mate-

rials have drifted gradually downward. In December, 1926, the Bureau of Labor index of the price of building materials was 172.7 (1913=100). It had averaged 173.4 in 1926, compared with 175.1 in 1925 and 1924, and 189.1 in 1923.

One noteworthy recent development has been the extension of the practice of financing building projects through the issuance of bonds for public sale. Persistent ease in the money conditions, generally favorable security markets, and the growing habit of investment by the public have contributed to the increasing volume of real estate bonds marketed. By 1925, total issues for "lands, buildings, etc." as listed by the *Commercial and Financial Chronicle*, had risen to $753,000,000, from less than $100,000,000 in 1920 or 1921. In 1926, such flotations amounted to $736,000,000. The increase has, of course, been accompanied by an expansion of mortgage loans by the usual agencies for this form of financing—building and loan associations, savings banks, and insurance companies.

The appearance of boom conditions in Florida and the subsequent collapse constitute the most dramatic incident of recent building history.[11] Real-estate speculation and construction activity in Florida, when they reached a peak late in 1925, had taken on all the characteristics of an old-fashioned land boom. The following contraction was rapid. For the 33 cities of that state listed by S. W. Straus and Company, the total value of building permits for the entire year 1926 was approximately two-thirds as great as for the year 1925; for December, 1926, the value was less than one-fourth as great as for December, 1925.

It is to be noted, however, that the collapse in Florida was taken quite as a matter of course elsewhere, and that the losses involved did not react seriously on the general business situation in the United States as a whole. The consequences might have been more serious had the economic situation been generally unsound; as it was, the Florida episode served as a warning of the inevitable result of excesses in real-estate speculation, and doubtless acted to restrain similar experiments in other parts of the country. At present, conditions like those in Florida during the summer of 1925 do not exist anywhere in the United States.

VI

A more important conservative influence than the Florida collapse has been the growing recognition of the danger of overbuilding. The expansion of construction was correctly explained, early in its development, in terms of shortages in building accommodation; and, when signs began to appear that construction was exceeding current demand, this condition was thought of in terms of overbuilding. An increasing volume of real-estate advertising, increasing vacancies, and some decline in rents, were matters of every-day observation; and to such observation was added the evidence furnished by published statistics, more detailed and comprehensive in character than had been available in previous periods of active building.

[11] For a detailed account of the Florida episode, see Professor H. B. Vanderblue, "The Florida Land Boom," to be published in the May, 1927, issue of the *Journal of Land and Public Utility Economics*. Discussion of the Florida situation, together with charts showing the course of real-estate transfers in Miami and Orlando, appears in the Harvard Economic Service, *Weekly Letters*, July 17, 1926, pp. 199-200, and November 20, 1926, pp. 326-327.

That the pace had become too rapid in certain types of building and certain localities became evident fairly early; at the end of 1925, the inception of the huge winter building program, much of which was of a speculative character, proved disquieting, especially to those who had financed certain of the buildings erected or under construction.

At this juncture, discussion of conditions existing in New York City was given considerable publicity. Among others who emphasized the danger in the situation, Walter Stabler, controller of the Metropolitan Life Insurance Company, expressed the opinion that overbuilding had appeared in certain types of structures in that city, and stated that his company was not granting loans on such buildings. Much adverse comment, however, was aroused by the expression of these views.[12] In the early fall of 1926, a prominent real-estate bond house (G. L. Miller and Company) went into receivership; and somewhat later, President S. W. Straus, of S. W. Straus and Company, in an address before a meeting of the American Construction Council, advocated governmental supervision of the issuance of real-estate bonds. The American Construction Council undertook, through a committee, an investigation into the practices of the real-estate bond companies, and has recently announced certain principles of procedure agreed upon by six large companies. Early in 1927, Mr. Straus issued a statement to the effect that office buildings, apartment houses, hotels, and apartment hotels had "reached the saturation point," and that "there should be a temporary breathing spell" in the construction of buildings of these types. At the same time, Mr. Stabler again stated that loft, office building, and high-grade apartment construction was overdone. These warnings appear to have received less adverse criticism than those of a year earlier, although, indeed, they gave occasion to certain more optimistic statements, such as that of the Secretary of the Treasury. Quite recently, S. W. Straus and Company has called attention to the almost complete absence of certain types of structures, regarded by it as overbuilt, from the construction program of February, 1927.

These statements clearly delineate the difficulty faced by the construction industry, at least so far as the erection of buildings in urban centers is concerned. At present the general economic situation is not such as would require a contraction of activity, and no significant change in this condition appears to be in prospect; in particular, there is no indication of a tightening in the money market which would retard operations, and the country remains generally prosperous. Clearly, however, new construction should not be undertaken in such volume that present ventures and those of the past few years will be unprofitable. In this connection, it should be kept in mind that in 1926 there had already appeared a moderate shrinkage in the volume of urban construction. No drastic general curtailment is contemplated, of course, but rather a slowing down, in the erection of certain types of structures, which may be helpful in avoiding later losses. Under present circumstances, the danger that an attempt to slow down building would result in disastrous curtailment is perhaps smaller than would be the case if general economic conditions were less sound.

[12] For this discussion, see *Commercial and Financial Chronicle*, December 26, 1925, pp. 3086-3089, and January 2, 1926, p. 19.

GOVERNMENT CROP REPORTS AND BUSINESS

By WILLIAM A. SCHOENFELD

THE past season's unprecedented cotton crop of over 18,000,000 bales, as estimated by the Crop Reporting Board of the United States Department of Agriculture, has aroused world-wide interest in crop reporting methods. This interest is not confined to cotton producers, traders, and spinners, but touches many industries and forms of business not directly related to cotton production and consumption. Some of this interest expresses itself in the form of criticism of methods employed by the board in arriving at its estimates, some in a genuine desire to know just how government crop reports can be used in various forms of business.

It is the purpose of this article to describe, from first-hand experience, how government cotton crop reports are prepared and released, and to indicate some of the uses to which they are, and may be, put by the business world. Since the form and personnel of the government organization is quite similar for the reporting of the several crops and for live stock, a description of how cotton reports are collated, prepared, and released will suffice.

I

As in industry and in commerce, the trend of modern agriculture is to predicate production and distribution upon statistics which anticipate the future. Crop estimating, that is, calculating the production of crops or live stock several months in advance, is not new. It was practiced during the days of the Pharaohs for taxation and for military purposes. Present-day crop and live stock estimates did not reach their full significance until after the establishment of cotton and grain exchanges, when traders on these exchanges required them for the conduct of their business. This became particularly true when the practice of trading in futures developed. Each trader on the exchange had to have some idea of the probable production and the supply of the commodity in which he dealt. Some traders used rule-of-thumb methods to satisfy this need, others depended upon trade contacts to keep them informed of crop prospects, while still others followed, like sheep, the better informed or influential traders in their market dealings. Lack of dependable information permitted abuses to creep in. The better informed, as well as the adventurous types, frequently attempted to "corner" the market on a specific crop. A corner was possible only when the large mass of people interested in the crop in which the corner was attempted were uninformed of the true conditions surrounding the supply or demand of the commodity in question.

Concomitant with the rise in the importance of the large international grain and cotton exchanges to their present world position, there arose an insistent demand by producers, traders, manufacturers, and consumers for dependable, unbiased statistics of probable production and supply of the commodities handled on the exchanges. Many looked to private estimators for

their information, but the mass looked to the government as a disinterested compiler and source of data.

The United States Government has been collating and publishing statistics on crops and live stock since its inception. Private statisticians have also been doing this for several decades with more or less good results. Governments, in general, do not lead in matters of this nature. Not until the pressure of public opinion to check abuses existing on some of the grain exchanges became great enough, did our government attempt to forecast probable crop production. This happened within the past two decades. The first reports released were incomplete and frequently missed their mark widely. As experience was gained, however, their accuracy increased, and with this came a greater dependence upon them by those who had use for crop statistics in their daily business. For illustration: the days on which cotton reports of the United States Department of Agriculture are released are known as "Bureau"[1] days on the several cotton exchanges of the world. These days are characterized by an air of expectancy prevailing among the traders on the several exchanges.

The Department of Agriculture maintains a large staff of trained agricultural statisticians in Washington and in each cotton state. These statisticians, during the past few years, have been selected on the basis of training, experience, and merit. They are all employed under the Civil Service Act and are not subject to political appointment. Adequate safeguards are thrown around their official conduct to prevent abuse of the trust, responsibility, and authority conferred upon them. Practically all these statisticians devote the major portion of their time to actual field observation and study of the progress and condition of the crop under consideration. These observations are supported by counts, measurements, and evaluations. Empirical methods are avoided as much as possible. Personal judgment, unless based upon supportable facts, is rarely depended upon, so as to reduce personal bias, however unintentional it might prove to be.

To augment the observation of these statisticians and their assistants, voluntary crop reporters, numbering more than 85,000 for cotton alone, make periodic reports upon specific and tangible phases of cotton condition and production. These reporters are recruited largely from cotton producers, although cotton ginners, country bankers, country merchants, cotton buyers, professional men, and others located in the cotton-producing areas represent an appreciable number. Pride of association in a worthwhile undertaking is the reward for their labors. Their services are rendered gratis to the government. By careful classification and check methods, the bias of each of these types of reporters has been ascertained and is considered in the tabulations of the returns.

II

Hundreds of thousands of questionnaires are mailed from Washington and from the headquarters of the state statisticians at regular intervals throughout the year, particularly during the growing season, to the many thousands of voluntary reporters. These questionnaires are returned in time for use in making up the crop reports which have been officially announced months

[1] From the fact that the reports are prepared and released by the Bureau of Agricultural Economics of the United States Department of Agriculture.

in advance. This information, with bias and obvious errors removed, together with that collated and prepared by the staff statisticians, is the basis upon which the final reports are prepared. The greatest factor of all affecting the accuracy of crop production estimates is the weather, both before and during the growing season. An unseasonable rain, frost, or drought may upset all cotton crop estimates. A crop condition that promises little at the beginning of the season may subsequently turn out to be very good, all because of the weather. Thus far it has been impossible, except in a very general way, to forecast weather several months in advance, especially for such a localized area as the Cotton Belt. Climatologists and meteorologists are at work on the problem, and one can reasonably expect that accurate, long-range weather forecasts may be possible in a few years. Until this is so, we can expect a certain amount of error in all crop reports, whether governmental or private.

As rapidly as crop reporters return the questionnaires sent them, the reports are summarized by thoroughly trained statistical clerks. To prevent collusion between workers and possible misuse of summary data, each clerk is given only a segment or portion of the returns received from any given locality. These segments, with headings removed, are placed in envelopes and locked in a safe located in the office of the Secretary of Agriculture. In this safe are also deposited other summary sheets, detailed reports, and coded statistical summaries telegraphed in by the staff statisticians a day or two preceding the crop report release day. The basic data for a particular crop, coming from so many widely scattered sources, resolve themselves into the form of a vast puzzle picture. Since it has never been put together, no one can tell, therefore, what the final picture will be like. Final summarizing is left until the morning of the previously announced crop release day.

By virtue of the legal power vested in the Secretary of Agriculture, he is directly responsible for the personnel of the Crop Reporting Board. The board consists of a chairman who, although possessing no vote in board proceedings, must decide in case of a tie, a secretary, two expert cotton statisticians who have a knowledge of cotton production, and three experts in cotton production who live in the cotton states. The following bureaus of the United States Department of Agriculture each have experts representing their respective bureaus at the board meetings: the Weather Bureau, Bureau of Entomology, and the Bureau of Plant Industry. These representatives act in a valuable advisory capacity to the board.

Immediately after the Crop Reporting Board goes into session, all doors are locked. Envelopes containing the segment summary sheets are opened, matched, and reconstructed. The data on the summary sheets are then tabulated and otherwise put in final form. The digested data, expressed in the form of condition figures, are placed upon work sheets, and each member of the board is furnished with a copy. The secretary of the board reads the details of the reports from the several states' agricultural statisticians in the cotton states, reviews weather and other factors affecting the growth of the cotton, and in the main presents such other data as may be of help to the board in making its decision. After this, the representative experts from the other

bureaus mentioned again review the weather from official records, and describe the extent, if any, of insect and plant disease damage. In this manner the members of the board are given an accurate concept of conditions in each cotton state. They are thus enabled to record their estimates of the cotton condition for each state.

Each member acts independently of the other members of the board. The estimates of the several members of the board are then transferred to a summary sheet. The chairman then presents to the entire board, state by state, the estimates of the several members. If there is a practical unanimity, he records as the final estimate the most frequent condition figure. Upon reaching a state about which there is a difference of opinion among the members, he asks those whose estimates indicate the greatest variation for their reasons. If reasons seem valid, supporting data are again reviewed. Final decision rests with the chairman, who must assume this responsibility. There is generally marked unanimity of opinion among the many sources of information. After the board has recorded the final estimates, no changes are permitted. The summary sheet is handed to experienced statistical clerks, who compute state production in bales. If the release hour is set at 11 a. m., in all likelihood the board completes its preliminary task of estimating about 10.15 or 10.30 a. m. Until then, no person, not even a member of the board, could have foretold definitely the board's estimate for any one state or for the cotton states as a whole.

About half an hour before the time set for the release, two representatives of the Census Bureau of the Department of Commerce are admitted to the room. These two representatives bring with them, in a sealed envelope, a report of bales ginned to the date of the report. This information, together with a statement by the board as to condition and probable production of cotton, is then printed on presses located in an adjoining room.

Ten minutes before the release hour, the Secretary or Acting Secretary of Agriculture is admitted to the room and given a master copy of the official report for his approval. This copy, together with all data bearing upon it, is filed away. Two or three minutes before eleven o'clock the Secretary or Acting Secretary of Agriculture, the chairman, and other members of the board pass from the locked room into the public release room. This release room is equipped with six or more telephones and manned by representatives from the several news agencies, telegraph services, and cotton exchanges, and other quasi-public institutions.

Immediately upon reaching the release room, the chairman instructs these representatives to step within the area in the room surrounded by a white line about six feet distant from the telephones and telegraph instruments. The chairman of the board then places a copy of the official Cotton Crop Report, face down, next to each telephone and telegraph instrument. Fifteen seconds before 11 o'clock, an official of the Department, watch in hand, calls out "Get ready!" The representatives immediately place themselves directly opposite their connected telephone or telegraph instruments. At the word "Go!" each man is at his instrument calling off, state by state, condition figures and probable production estimates. Soon thereafter the large radio sending stations broadcast both here and in

Europe the gist of the report. After the release any one can secure copies of the report.

In order to give traders on the several American cotton exchanges time to analyze and weigh the importance of the government report, the rules of the several exchanges have been modified during recent years to provide for a suspension of trading for a period of less than thirty minutes immediately following the official time of the release. Trading can thereby be predicated upon calmer judgment. This change of rules has done much to prevent violent fluctuations immediately following the government report.

III

To be of value to those interested in a certain crop, estimates and forecasts of production must be accurate in addition to being honestly and efficiently prepared. The following table of comparisons (Table I) between government and private forecasts of cotton production issued early in December of each year gives an idea of the relative accuracy of each. It will be seen that, on the whole, government forecasts more nearly approximate final ginnings than do private forecasts. If one were to examine the forecasts of certain private agencies, it would be seen that they are as accurate as those of the government.[2] The averages of all private agencies are, however, pulled down by agencies whose forecasting organizations are limited and methods employed empirical. If one were to examine and compare production estimates issued early in the season by both the government and private agencies with the final ginning reports issued the subsequent March, one would find a wider variation than is the case with the December reports. That is to be expected. By December, the cotton crop has matured and much of it has been picked. Whether the crop still remaining in the field will be picked depends largely upon the price of cotton and the availability of labor. In a large measure, this uncertainty accounts for the occasional seeming inaccuracy of the December forecasts when compared with final ginnings in March. Early in the season estimates of production must assume that weather will continue normal until the end of the growing season. Until long-range weather forecasting is an accomplished

[2] The Chamber of Commerce of the United States, after a careful survey of the methods of government crop reporting, has this to say: "There is no way of determining whether the government or private forecasts more accurately reflected actual conditions during the growing season, although the magnitude of the governmental statistical organization would seem to give an advantage to the latter's forecast. . . . Some of the private forecasting agencies have good records, but none of them surpassed the record of the Department of Agriculture in its December estimates for the ten-year period." ("Government Cotton Crop Forecasts," Chamber of Commerce of the United States, p. 9.)

TABLE I. UNITED STATES GOVERNMENT AND PRIVATE AGENCY COTTON PRODUCTION FORECASTS*—PERCENTAGE RELATION OF DECEMBER 1 FORECAST† TO FINAL GINNINGS‡

Crop Year	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925
Government Forecast	−0.3	+0.5	−3.2	−2.8	−3.4	−3.4	+4.8	+2.0	−0.6	−3.5	−3.2
Averages of Private Forecasts	+2.6	−0.1	−4.2	−3.9	−8.2	−6.1	−0.4	+0.9	−3.7	−3.3	−4.5

* Sources: *Commerce and Finance*, New York; *Pearsall's News Bureau*, New York; and the *Cotton Gazette*, London.
† As issued by the United States Department of Agriculture in December.
‡ As reported by the United States Department of Commerce in March following harvest of crop.

fact and formulae can be prepared and used by government and private crop reporting agencies in making estimates, it cannot be expected that the early reports will hit the subsequent final ginning bull's-eye with 100% accuracy. The markets demand and require early in the season estimates. They could not do without them. Private agencies will supply them, and the government as a neutral crop reporting agency cannot avoid its responsibility by omitting them.

That the government is making every effort to improve its methods as fast as new and approved statistical methods are developed is manifested by the fact that, in addition to extensive research on ways of reaching greater degrees of accuracy, it subjects its entire organization and methods to a critical examination by a committee of nationally known and distinguished statisticians and economists. This committee makes periodical inspections and proposes recommendations for changes or improvements. These recommendations have been put into effect as rapidly as time and means would permit.

IV

Many and wide-spread are the uses to which the government reports are being put. The periphery of their uses is constantly enlarging. This would indicate that they are satisfying a real need. It might be added, in passing, that reports on specific crops or live stock are not issued unless there is a real, expressed need. Time and narrowing of funds, and volume of output of reports considered, prevent the issuing of reports of negligible value, however interesting they might be.

Most of these reports are quite comprehensive. Details as to probable plantings, actual plantings, quantities of fertilizers used, availability of labor during planting, growing, and harvest season, weather, insect damage, soil and tillage conditions, probable yields, and other information peculiar to each crop are contained in the several crop reports. Live stock reports contain comparable information. Much of these data are given by states, and some by counties within each state. As far as data may be obtainable, reports for similar crops and live stock for each of the other countries in the world are issued by the several government departments.

All this information, coupled with census information, makes a useful and necessary array of facts for modern business. To farmers, they assist in determining whether or not acreage should be increased or decreased, thereby stabilizing production. Since government reports are prepared in an unbiased manner, with as good statistical methods as are known, agricultural producers and others use them to check against reports issued by private agencies.

Farmers' cooperative organizations and cotton dealers use the government crop reports to plan their sales programs. Bankers and financiers predicate the size and distribution of funds and loans with which to finance production, harvesting, warehousing, processing, manufacturing, and subsequent marketing upon the statistical information contained in the crop reports. The placing of farm mortgages by federal land banks and insurance companies is determined to a large extent upon the productivity of a region as indicated by crop reports.

Railroads make plans upon the gov-

ernment crop reports months in advance for equipment needed, as well as for its distribution.[3] Manufacturers frequently determine quantities to manufacture and ascertain their sales quotas, geographically and quantitatively, from the information contained in the reports.

The sales department of one of the well-known makes of automobiles has recently made this interesting discovery as a result of its analysis of the government cotton production reports issued last season: that a state by state and county by county analysis of reported cotton production, when related to estimated costs of production, showed certain sections of the Cotton Belt quite prosperous. A cursory examination of cotton crop would have led to the conclusion that the cotton South presented a poor sales prospect for automobiles this year. This would have been true in the main, but the comparison of production data to estimated costs showed up the bright spots in an otherwise financially depressed area.

The statistical department of one of the largest soap manufacturers in the United States makes extensive use of the cotton and hog reports. Cottonseed furnishes an oil useful in the manufacture of fine soaps and in lard substitutes and cooking oils. The price of cotton and of cottonseed are closely related. The government cotton reports give this manufacturer an early picture of the sources of supply of his cottonseed oil. Upon this information are predicated purchases. Hog and live stock production reports enable this soap manufacturer to consider the probable competition between animal and vegetable fats in the making of soaps and cooking fats. The several kinds of reports supplement each other in this case. They are all necessary.

One of the largest lumber companies in the United States bases its building material sales quotas upon the condition of crops in the agricultural areas. It has found by long experience that farmers will plan new buildings or extensions, make repairs on the old, and in general use more lumber when crops and prices promise to be good. This company has also noted that a shift in types of farming—say from general farming to dairying—calls for more and better buildings. Crop and live stock reports aid this company to see the changes, when and where they take place, in time to prepare a sales program.

There does not seem to be any relationship between the management of a circus and crop reports. Still, one circus uses crop reports to plan its itinerary. Farmers do not patronize circuses when crops and prices are poor, but the "Big Tent" is not large enough to hold them when the harvests are plentiful and prices are good.

A prominent canning establishment uses crop reports to locate raw material and plan sales. Contrary to common belief, the rural districts are extensive users of canned fruits and vegetables

[3] One very logical use to which wheat crop reports have been put by certain railroads is in planning for car supply and distribution. A southwestern railroad made such effective use of these reports that at no station along its lines where grain was subsequently shipped was there an over- or undersupply of rolling stock. In fact, the port which this railroad fed, not having given sufficient thought to the probable onrush of grain, was compelled to place embargoes on wheat until it found shipping space to handle the volume offered.

Recently one of the railroads which was seeking permission from the Interstate Commerce Commission to abandon certain non-profit branch lines made extensive use of the crop report data in its petition. Where railroads have planned extensions into new territory, crop production records have played an important part.

and condiments, especially in the Far West and in the cotton South.

Advertising agencies quite frequently use the data to plan advertising campaigns. Exchanges, boards of trade—the largest users of crop reports of all kinds, both government and private—and similar institutions depend largely upon the government to furnish their members with unbiased crop statistics. The packing and milling industries, because of their dependence upon agriculture for practically all of their raw materials, are also extensive users of crop reports. Buying, production, sales quotas (both domestic and foreign), and organization policies are based to a large extent upon what agricultural producers have done in the past, their present production possibilities, and the trend in types of farming in areas of interest to these industries. Within the past few years, meat packers have placed an increasing dependence upon the several periodic live stock forecasts of the government in the planning of their production schedules. Governments have legislative, administrative, and military uses for crop reports. Economic forecasts and business analyses depend in an appreciable measure upon crop statistics. Business and industries that use the raw products of agriculture have, of course, an immediate interest.

There are many others, as for example the large mail-order concerns that have a large rural patronage; freight steamship companies that transport grain, meats, cotton, or fruits; manufacturers of radio sets and accessories; automotive manufacturers; fertilizer companies; tanners; low-voltage electrical equipment manufacturers; the baking industry; fruit and produce buyers for chain stores; canners; soap manufacturers; news dispatch agencies; radio broadcasting stations; real estate companies; warehousing concerns; cold storage plant operators; and many others that do, or could, use to excellent advantage one or several of the many commodity crop reports of the government in the conduct of their business. It would be possible to enumerate a number of additional users and uses of and for the government crop reports.

Business can, and no doubt will, make wider use of timely crop estimate data, once it has recognized their value. The government, by virtue of its magnitude as well as its presumably neutral attitude, is in a favorable position to make crop estimates both accurate and timely. Unless restricted or influenced by legislative action, the United States Department of Agriculture should be looked upon as the organization which sets the standard for usable crop reports.

THE USE OF ADVERTISING DURING DEPRESSION

By ROLAND S. VAILE

A COMMON policy among manufacturers has been to gage the amount of their magazine advertising by general business conditions; advertising space has been increased during prosperity and decreased during depression. Professor Crum [1] found that the "major fluctuations in the volume of advertising carried by magazines since the war have taken place slightly in advance of similar movements in general business conditions." The figures which he published also showed that the fluctuations in advertising were somewhat wider than in general sales.

There are numerous departures from this general policy, however, in the case of individual firms. These departures are conspicuous, not alone because of the magnitude of the variations, but equally because of the outstanding character of some of the firms. There are many cases where institutions which appear to be directly competing have evidently used markedly different technique in this part of their sales promotion.

The figures in Table I are illustrative of these differences in policy. They are adapted from the monograph of the Crowell Publishing Company, *National Markets and National Advertising, 1925*. The changes in expenditure for magazine advertising during the five-year period, 1920-1924, are contrasted for individual firms in similar lines of business. The money expended by each firm during 1920 is taken as 100, because Professor Crum's study showed that magazine advertising reached a peak in that year, to be followed by a marked slump. The expenditures for subsequent years are reported as percentages of this year. In each case the two firms contrasted are engaged in similar lines of business and they have been, in general, heavy users of magazine advertising.

Many similar differences appear in almost every line of goods. The illustrations given seem typical and could be multiplied many times over.

Some of the differences portrayed are doubtless accounted for by changes in policy between the use of magazine advertising and other forms of sales promotion, although in several cases personal correspondence with the sales manager of the company indicates that the movement of magazine advertising fairly represents the general sales policy at the time of the 1920-1922 depression. Some of the differences may also be due to a willingness in 1919 and 1920 to spend money extravagantly for advertising rather than pay high corporation taxes. After all allowances are made, however, it seems that a real difference in institutional policy exists in regard to sales promotion during times of depression; some concerns have apparently assumed that advertising is one of the costs which may be reduced during depression, while others have looked upon it as a force for making sales when they are hard to make. Both of these points of view have fre-

[1] Crum, W. L., Harvard Economic Service, *Weekly Letters*, Vol. 3, p. 47.

TABLE I. CHANGES IN MAGAZINE ADVERTISING, 1920–1924
(Expenditures for 1920 = 100)

Firms	Actual Expenditure 1920	Relative Expenditures				
		1920	1921	1922	1923	1924
Clothing						
Hart, Schaffner & Marx	$ 188,500	100	150	155	165	150
Kuppenheimer	240,718	100	50	65	65	45
Foodstuffs						
Postum Cereal Company	375,615	100	120	160	135	330
Quaker Oats	1,390,108	100	40	40	45	40
Soap						
Palmolive	377,150	100	125	150	185	190
Resinol	424,197	100	60	55	70	40
Paint						
Valentine & Company	184,270	100	120	150	225	320
Sherwin-Williams Company	201,815	100	55	50	60	115

quently been defended in articles appearing in *Printer's Ink* and elsewhere, largely on *a priori* grounds. Little factual evidence has been presented in support of either side.

Two questions are suggested by these differences in policy:

1. What is the effect of each policy upon sales?
2. Is the effect the same in the case of all commodities?

In order partially to test these questions, the writer has compiled sales figures for the years 1920 to 1924, inclusive, for about 250 well-known firms. A large portion of these figures were obtained from Poor's *Manual of Industrials—1926*. These were supplemented, however, by direct correspondence with the companies in cases where Poor does not report sales. In a number of cases the request was made that the sales of individual firms be held as confidential, so that no report is made in this paper of sales by firms.

In approaching the first question, the sales records of the firms were sorted into three groups, namely:

1. Firms which did no magazine advertising from 1920 to 1924, inclusive.
2. Firms which increased their magazine advertising from 1920 to 1924.
3. Firms which decreased their magazine advertising from 1920 to 1924.

Some firms, for which sales records were available, were so inconsistent in their advertising policy during these years that they could not be classed in any of the above groups. Such firms were not included in the study, only those with marked trends being retained.

The average (arithmetic mean) sales for the different groups in 1920 were as follows:

Non-advertising firms..$23,000,000
Increased advertising .. 25,000,000
Decreased advertising.. 21,000,000

All sizes were represented in each group, with a range from $1,000,000 to nearly $1,000,000,000 in each case. In the same year, 1920, the average expenditure for magazine advertising was $170,000 per firm, both in the group which subsequently increased and in the one which decreased their expenditures. This amount was 0.68% of sales in the first group and 0.81% in the second.

Because of the difference in size of individual firms, the annual dollar sales

of each were reduced to relatives. The sales for 1920 were arbitrarily taken as a base in all cases, because it was the first year for which records were available for many of the firms, and because it was generally a year of high sales. Relatives were used rather than dollar sales so that the movement in any one firm might have equal weight with the movement in any other. The writer believes that this gives a more accurate picture of the relation between advertising and sales than would a study of total sales, wherein the movements in the large firms might entirely obscure the movements in the smaller firms. The question may still be raised whether advertising during depression is more effective with firms of one size than with those of another; the present paper makes no attempt to answer this question.

Table II shows some of the characteristics of each group, together with the relative sales associated with each of the magazine-advertising policies.

The sales of the non-advertising firms were 20% lower in 1921 than in 1920. In contrast, the slump was only 12% for the firms which increased their magazine advertising, while it was 26% for the firms which decreased their advertising expenditures. All three groups showed increasing sales from 1921 to 1924, but the increase was most pronounced in the group which increased their advertising, and least pronounced in the non-advertising group.

While the firms which increased their advertising also increased their sales, they did not do so proportionally. Advertising became relatively more costly in this group, while it became relatively less costly in the group which decreased advertising. Just what effect these changes may have had on net profits has not been determined; it seems impracticable to study the movements of net profits without a more intimate knowledge of the accounting methods of individual firms than is given in the published reports.

TABLE II. CHARACTERISTICS OF EACH GROUP, WITH RELATIVE SALES ASSOCIATED WITH EACH OF THE MAGAZINE-ADVERTISING POLICIES

	Year	Firms Not Advertising in Magazines, 1920–1924	Firms Which Increased Advertising in Magazines, 1920–1923	Firms Which Decreased Advertising in Magazines, 1920–1923
Number of firms	.....	105	58	67
Average sales	1920	$23,000,000	$25,000,000	$21,000,000
Relative sales	1920	100	100	100
	1921	80	88	74
	1922	92	107	88
	1923	105	128	103
	1924	108	131	105
Average expenditure for magazine advertising	1920	.....	$170,000	$170,000
Relative magazine advertising	1920	.....	100	100
	1921	.....	138	75
	1922	.....	157	50
	1923	.....	195	54
	1924	.....	242	58
Ratio of magazine advertising to sales	1920	.....	0.68%	0.81%
	1921	.....	1.04	0.81
	1922	.....	1.00	0.46
	1923	.....	1.03	0.43
	1924	.....	1.25	0.45

TABLE III. RELATIVE MOVEMENT OF SALES ASSOCIATED WITH DIFFERENT ADVERTISING POLICIES

	1920	1921	1922	1923	1924
Increased advertising	100	110	116	121	121
No advertising	100	100	100	100	100
Decreased advertising	100	95	96	98	97

In order to make the contrasts clearer, an attempt was made to eliminate both secular growth and cyclical variation, which might affect all concerns alike regardless of their advertising policies. Because of the short period of time involved, no attempt was made to fit curves which might serve as base lines. Rather, the relative sales of the non-advertising group were taken as the base and counted as 100 for each year, on the assumption that the sales of these firms would give a fair picture of the combined effect of secular and cyclical variations unaffected by the force of advertising. Table III shows the resulting figures. For 1920, all the figures are obviously at 100. The subsequent relatives are measures of the sales associated with changes in advertising policy as contrasted to sales of non-advertising firms. These figures are derived, of course, directly from the preceding table.

Two facts seem to stand out from these data with considerable clarity: First, a definite spread occurs between the sales of firms which increased their advertising and those which decreased it. Where intensive advertising during depression was a part of the sales technique, sales were maintained in better volume than where advertising appropriations were cut. Second, the non-advertising firms fared better, especially in 1921, in volume of sales than did those firms which reduced their advertising. Advertising is a form of sales effort, and its reduction at a time of depression seems to have resulted in a greater loss of sales than was experienced by the firms which constantly depended on other types of distribution. This suggests that personal selling to the trade and dealer good-will may have more lasting importance at such a time than has consumer recognition.

As a further test of the effect of increasing and decreasing advertising during depression, the relative changes of sales of individual concerns from 1920 to 1921 were correlated with the corresponding changes in advertising. Because of the greater range of change in advertising than in sales, a standard deviation was determined for each series, and each item was divided by the deviation of its series. The Pearsonian coefficient for the resulting figures was $.68 \pm 9$. From this it appears that sales of individual firms may often be materially affected by advertising, even during depression.

TABLE IV. RELATIVE ADVERTISING EXPENDITURES

Industry	Firms Which Increased, 1920–1923					Firms Which Decreased, 1920–1923				
	1920	1921	1922	1923	1924	1920	1921	1922	1923	1924
Personal items	100	115	185	180	220	100	60	50	30	35
House furnishings	100	130	160	250	275	100	70	50	70	80
Clothing	100	180	170	290	360	100	70	35	60	50
Automobile equipment	100	125	150	175	280	100	75	50	60	75
Automobiles	100	145	145	185	250	100	75	25	35	60
Groceries	100	115	130	120	135	100	75	90	75	70
Building materials	100	125	160	165	170	100	95	40	50	35

Turning now to the second question suggested above: "Is the effect the same in the case of all commodities?" The firms for which data are available are divided about equally among seven industries, namely: (1) personal items, such as tobacco, perfumes, and toilet articles; (2) house furnishings, from kitchen ware to pianos; (3) clothing, including men's and women's suits, hats and coats; (4) automobile equipment frequently purchased directly by consumers, such as tires, shock absorbers, chains; (5) automobiles, of which the Ford was the only non-advertising representative; (6) groceries; and (7) building materials.

The sales figures used throughout this study are the total annual sales in dollars, uncorrected for changes in price level. One of the advantages, therefore, of dividing the data into industrial classes is the fact that within these classes price changes are likely to affect one firm much as they do another.

The same methods of comparison were applied to the data for the several industries as were used in analyzing the changes in sales for all the firms together. Tables IV, V, and VI present the summarized data by industries, giving, first, the relative advertising expenditures both for the group which increased and the one which decreased; second, the growth in sales for each of the advertising groups; and, third, the relative movement of sales of the advertising groups as contrasted to the non-advertising firms.

It will be noted from the above data that in every industry there is a measurable spread between the relative sales of the firms which increased their advertising and of those which de-

TABLE V. GROWTH OF SALES ASSOCIATED WITH DIFFERENT ADVERTISING POLICIES

Industry	Number of Firms	Dollar Sales 1920	Relative Sales				
			1920	1921	1922	1923	1924
Personal items							
Increased advertising	10	$34,000,000	100	93	107	112	120
No advertising	12	20,500,000	100	80	83	90	95
Decreased advertising	10	22,000,000	100	73	82	90	93
House furnishings							
Increased advertising	7	19,200,000	100	83	105	120	108
No advertising	11	8,540,000	100	70	84	104	95
Decreased advertising	7	13,000,000	100	71	86	101	90
Clothing							
Increased advertising	8	16,500,000	100	102	112	118	106
No advertising	20	18,800,000	100	86	96	100	96
Decreased advertising	9	13,600,000	100	77	74	73	70
Automobile equipment							
Increased advertising	7	56,000,000	100	77	96	117	120
No advertising	11	58,000,000	100	67	86	107	110
Decreased advertising	14	28,000,000	100	72	80	101	100
Automobiles							
Increased advertising	8	.....	100	78	137	184	177
No advertising	1	.....	100	95	126	188	187
Decreased advertising	9	.....	100	73	124	159	165
Groceries							
Increased advertising	10	22,000,000	100	87	96	103	120
No advertising	38	21,000,000	100	85	100	103	115
Decreased advertising	10	24,000,000	100	77	87	94	102
Building materials							
Increased advertising	9	14,000,000	100	81	90	120	125
No advertising	12	13,500,000	100	75	87	123	117
Decreased advertising	8	15,000,000	100	78	92	118	120

creased. Moreover, in every case except that of building materials, the firms which decreased their advertising suffered a greater reduction of sales than did the firms which were doing no advertising. Thus the general relationship between advertising and sales seems to be consistent in all industries, but there are differences in degree which are worthy of comment.

The spread between the sales of firms which increased their advertising and the sales of those which decreased is much more pronounced in some industries than in others. It is particularly large in the cases of personal items and clothing, and fairly large with automobile equipment and house furnishings, while it is small in the cases of automobiles and groceries, and almost negligible with building materials. This would indicate that magazine advertising is a more potent force in the sale of personal items and clothing than it is in the sale of the other lines. This is further borne out by the fact that the sales of groceries and building materials were only slightly increased by increased advertising, when compared with the sales of the non-advertising firms in these two fields.

The data of this study of advertising force in various industries seem in harmony with other knowledge of consumers' buying habits. Personal items and clothing, as included in this study, are purchased largely by and for men, as are also automobile equipment items. Men are said to be especially susceptible to brand advertising because they

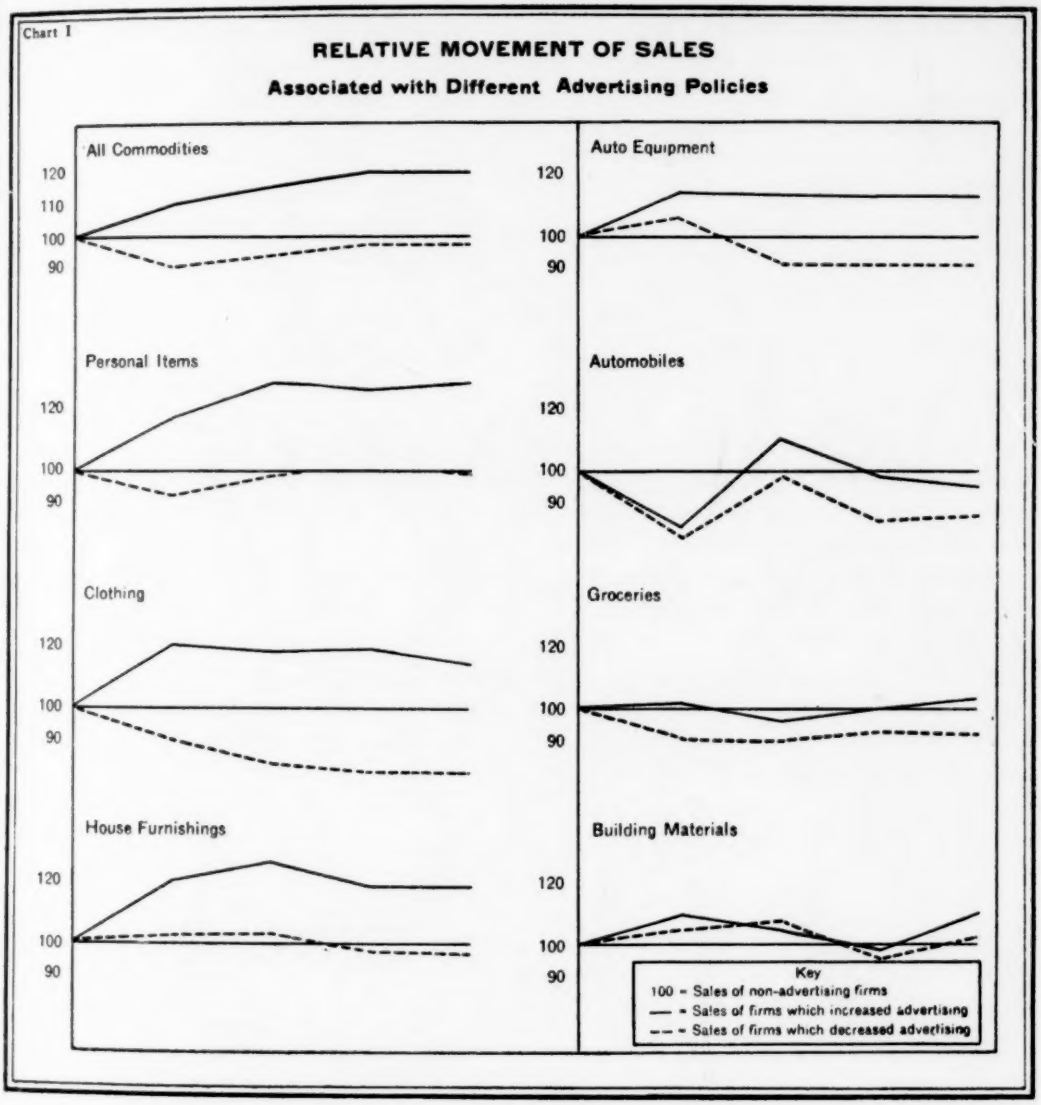
TABLE VI. RELATIVE MOVEMENT OF SALES ASSOCIATED WITH DIFFERENT ADVERTISING POLICIES

Industry	1920	1921	1922	1923	1924	Points Spread Between Firms Which Increased or Decreased Advertising			
						1921	1922	1923	1924
Personal items									
Increased advertising	100	116	129	125	127				
No advertising	100	100	100	100	100	25	30	25	28
Decreased advertising	100	91	99	100	99				
Clothing									
Increased advertising	100	118	117	118	111				
No advertising	100	100	100	100	100	28	30	35	28
Decreased advertising	100	90	77	73	73				
House furnishings									
Increased advertising	100	118	125	115	115				
No advertising	100	100	100	100	100	16	23	18	20
Decreased advertising	100	102	102	97	95				
Automobile Equipment									
Increased advertising	100	115	112	109	109				
No advertising	100	100	100	100	100	8	19	15	18
Decreased advertising	100	107	93	94	91				
Automobiles									
Increased advertising	100	80	109	98	95				
No advertising	100	100	100	100	100	3	11	13	7
Decreased advertising	100	77	98	85	88				
Groceries									
Increased advertising	100	102	96	100	104				
No advertising	100	100	100	100	100	12	9	9	15
Decreased advertising	100	90	87	91	89				
Building materials									
Increased advertising	100	108	103	98	107				
No advertising	100	100	100	100	100	4	−2	2	5
Decreased advertising	100	104	105	96	102				

do not care to "shop," and because they are willing to accept the same article time after time. Moreover, there are several instances within these groups where the use is an habitual one—such as smoking—and in these cases the brand name may become associated with the habit.

Groceries, on the other hand, are often bought on the recommendation of the retailer. George Louis, writing in *System, the Magazine of Business,* for June, 1912, reported a study in which it was found that unknown brands of foodstuffs could be substituted for advertised brands with little opposition on the part of the consumer. Groceries are convenience goods; there is little defined character to individual brands, so that the suggestion of the retailer has much to do with the consumer's choice.

Building materials, even though advertised to consumers, are generally



sold to contractors and others who regard them as industrial goods; profit on the transaction rather than immediate enjoyment of the article is a prime consideration. These buyers are likely to be in close touch with the trade so that they do not need the manufacturer's advertising as an aid in purchasing. For these reasons it was to be expected that consumer advertising would not be as important a factor with such commodities as with strictly consumer goods. It is of interest that there is any measurable effect at all from such advertising at a time of depression.

The fact that automobile sales of the companies which increased their magazine advertising fell off in 1921 more than did the sales of the non-advertising firms deserves special comment. The comparison here made is with the Ford car only, and it is well known that the Ford Motor Company has long received large amounts of free publicity; it is hardly fair, therefore, to consider it as a non-advertising concern. Moreover, it was to be expected that there would be a movement towards low-priced cars during the depression, which doubtless helped the Ford sales in comparison with sales of the other groups. The Ford price in 1921 was just about one-half the average price of the cars included in the other groups. The relatively small spread between the sales of the firms which increased their advertising and those which decreased suggests that automobiles are sold to a large extent by personal solicitation, and that advertising is of less importance with them than with certain other commodities.

To summarize the suggestions that grow out of this study, it would seem:

1. That increased magazine advertising during depression generally resulted in an increase in sales relative to the sales of competitors who did not make such increases.

2. That reduction in advertising during depression generally resulted in a greater falling off of sales than occurred with firms which did no consumer advertising.

3. That different classes of commodities respond in different degree to changes in advertising. In general, it may be said that these differences are in keeping with accepted statements concerning consumers' buying habits.

4. If, in some cases, the decrease in magazine advertising has been offset by an increase in the use of newspapers or other mediums, the comparisons indicate that such change of medium has not resulted in larger sales.

5. The increase in sales which apparently accompanies increased advertising during depression does not necessarily indicate an increase in profits; it has been impossible to consider the profit aspect of the problem in this study.

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SUMMARIES OF BUSINESS RESEARCH

THE DEVELOPMENT OF CLASS A AND CLASS B STOCKS[1]

ONE of the outstanding recent developments in corporation finance has been the appearance of Class A and Class B stocks. The pronounced upward trend in the offerings of such stocks began in December, 1924, and continued throughout 1925. They have attracted notice particularly because of their characteristics as to voting rights,[2] and they often have other features that show a trend toward increasing complexity and flexibility in modern financial structures. This article attempts to analyze the developments in such stocks, by tracing their growth, examining their peculiar characteristics, and estimating their importance in relation to the total amount of recent corporate financing.

The primary rights inherent in the ownership of a share of stock may be reduced to four. "First, there is the right to participate in profits earned by the company, or, in other words, the right to dividends; second, the right to share in any assets which may remain upon dissolution of the corporation after the creditors have been paid; third, the right to participate in actual capital which is left free by a reduction of nominal capital; and fourth, the right to participate in the management of the company, by voting at shareholders' meetings. To these might be added the preëmptive right to subscribe to any increase in capital before the new shares are issued to strangers."[3] The ownership of stock thus supposes rights that involve control, income, and risk. When more than one class of stock occurs in a corporate structure, these rights may be divided; one class may have more voting power than another, or a right to prior or fixed dividends, or all the risk involved in recovering the capital invested, upon dissolution.

As a device for obtaining flexibility in corporate financial structures, the division of stock into various classes, each having certain distinct rights, is not a new procedure. Even prior to 1880, preferred stocks were well known in the United States, and their history has been one of increasing variety and complexity in the preferential rights which attach to them. Today, stocks are outstanding which show a wide variety of rights in respect to the three primary points of ownership, control, income, and risk, and they appear under all sorts of names. Among them are the recent issues of so-called Class A and Class B stock.

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[1] Adapted from two theses written for the course in Corporation Finance in the Harvard Graduate School of Business Administration: "A Study of Industrial and Public Utility Flotations of Class A and Class B Stocks," by C. C. Head, and "A Study of Class A and Class B Common Stocks," by Donald C. Woods.

[2] W. Z. Ripley, "From Main Street to Wall Street," *Atlantic Monthly*, January, 1926. A criticism of the increasing loss of stockholders' voting privileges. W. H. Stevens, "Stockholders' Voting Rights and the Centralization of Voting Control," *Quarterly Journal of Economics*, May, 1926. A study of a large number of preferred and common stock issues, with particular reference to the development of the various features of voting control.

[3] Machen, *Modern Law of Corporations*, p. 425.

Development of Centralized Voting Control, with Particular Reference to Class A and Class B Stocks

These issues have been criticized chiefly because of their voting rights, which often tended to centralize control in a small group. This tendency, however, did not originate with these stocks, but has shown itself since the close of the last century in the division of stock into preferred and common issues. Stevens, in the *Quarterly Journal of Economics* for May, 1926, has traced the development of this tendency. Some of his conclusions are summarized in the ensuing section.

The early issues of railroad preferred and common stocks were usually full-voting, and this is a common characteristic of these securities even today. In the public utility field, non-voting or restricted voting issues are found more frequently than among industrials. For example, the Empire District Electric Company preferred and the Georgia Railway and Power first preferred are completely non-voting, while a large number of companies have preferred issues which vote only on certain matters or in certain contingencies. Among eighty public utility companies, however, Stevens found no issues of non-voting or contingently voting common. Among industrials, a number of the companies formed between 1885 and 1898 had full-voting issues of both preferred and common stock, nor were voting rights much affected in the development of industrial combinations between 1898 and 1903. During this period, companies were combined by issuing preferred stock, or bonds and preferred stock, up to the reasonable extent of property valuation, while the common stock represented "hopes" and was given as a bonus. The owners of the combining properties naturally demanded voting rights in the stock they received, whether it were preferred, as direct payment, or common, as bonus. It is significant, however, that about 1898 some industrial combinations did restrict the voting rights of stockholders. The International Silver Company, organized at this time, had 9,000,000 shares of preferred and 11,000,000 shares of common, the latter being non-voting until 1902, and after that entitled to but one vote for each two shares. The Federal Mining and Smelting Company, the American Caramel Company, and the Royal Baking Powder Company restricted the voting rights of their preferred stockholders. In the latter case, it was significant that the preferred stock was distributed to the public instead of the common, as had been usual. This change of policy may be traced to the fact that because the baking powder business had been very profitable, the organizers wished to insure to themselves the lion's share of potential future earnings.

The period 1903-21 saw a great growth of preferred issues, most of which have voting rights only under certain circumstances, and some of which have no voting rights whatever. Stocks of the latter type have been issued, for example, by the Standard Oil companies of New Jersey and Ohio, the Atlantic Refining, Shawmut Mills, American Thread, Youngstown Sheet and Tube, Bethlehem Steel, and International Milling companies. One might mention a number of reasons for the growth of non-voting or restricted voting preferred stocks during this period. It has often been cheaper to issue both preferred and common stocks. Markets which could not absorb a single large issue of com-

mon could take an equivalent amount of preferred and common, the latter in many cases being given as a bonus. A large group of investors is willing to exchange their voting rights, inherent in all stock, for a steady and fixed rate of dividend and a supposed lessening of the risk as contrasted with that of common stock. As Stevens mentions, the demand from this type of investors has caused a development of preferred issues which possess certain similarities to debenture bonds but give a higher yield. He also mentions the excess profits tax as favoring the issue of preferred stock, for the proceeds of bond or note issues could not be counted as invested capital in computing taxes, while funds raised by stock issues could be added to the investment upon which the rate of return was computed.

The Extension of Centralized Voting Control to Common Stock Issues

The disfranchisement of preferred stockholders proved to be but a step in the movement toward centralized voting control. Under the impetus of the successful sale of preferred stock issues, the elimination of voting rights was extended to the common, and the two types of common stock resulting were designated arbitrarily as Class A and Class B. Sometimes the voting portion bore one letter, sometimes the other. Although the International Silver Company, as mentioned above, issued non-voting common in 1898, this early issue was not typical of the recent movement, which apparently began with the issue of "Class A" stock by the Perlman Rim Corporation in 1916.[4] The company was incorporated in New York state, with 100,000 shares of no par value, of which 3,000 shares, or 3%, were to have exclusive voting power and to be called Class A stock. The remaining 97,000 shares were called common stock. Both classes were identical as to dividend privileges and participation in the assets.

An examination of the circumstances surrounding this early issue of split common stock, which was typical of many later issues, may throw some light on the reasons causing it. Mr. Perlman had been a successful manufacturer of automobile demountable rims and rim accessories for several years prior to 1916, and at that time his concern was well established and profitable. In 1916 Mr. W. C. Durant, who had been president and owner of the controlling interest in the outstandingly successful Chevrolet Motor Company during 1914 and 1915, purchased Mr. Perlman's business and made it a part of his growing automobile combination. By means of the new capitalization plan, the non-voting common stock was sold to the public, while the 3,000 shares of voting stock were retained by the management.

Only two months after this move, the United Motors Corporation was incorporated in New York state, with Mr. Durant one of its leading organizers. This company was an amalgamation of companies engaged in the making of automobile accessories, all of which were controlled by stock ownership.[5] Mr. Durant's complete control of the Perlman rim company through the split common stock device gave him an influential position in bringing it into the new consolidation. The United Motors Corporation was also capitalized in the new way. On December 31, 1916, there were 1,200,000 authorized and outstanding shares of no-par-value stock, of which 5,000 shares

[4] *Moody's Manual of Industrials*, 1917.
[5] *Ibid.*

were called "Class B," vested with exclusive voting power and held by the promoters. The remaining 1,195,000 shares were sold to the public, and in this case were called "Class A," probably because it was supposed that a prospective purchaser would think "class A" stock to be of greater investment value than "class B," from the mere relation of the letters in the alphabet. This system of naming, however, was not adopted by all the companies which later issued common stock of the two classes under discussion; some designated the voting stock as Class A and some as Class B.

The Bethlehem Steel Corporation was the third to issue a non-voting common stock. On February 14, 1917, the stockholders voted to increase the capital stock of the company from $30,000,000 to $75,000,000, by issuing $45,000,000 of "class B," non-voting common stock, $30,000,000 of which was to be distributed as a 200% stock dividend to the old common stockholders, and the remaining $15,000,000 offered to common stockholders at par. On September 18, 1917, further enlargements of capital were made by offering $30,000,000 non-voting 8% preferred stock at par to the common stockholders, in amounts equal to one-half the par value of their respective holdings, whether of class A or class B.

The reasons for these moves can be summarized as follows: The large increase in earnings during 1915 and 1916 had created an unwieldly surplus which could best be distributed to stockholders in the form of a stock dividend, representing its capitalized value.[6] The spring of 1917 was a particularly good time to dispose of such capitalized earnings because of the exceptionally high price of the company's stock. But the disposal of large amounts of new stock having voting privileges might have caused the management of the company to lose control. It would have been particularly dangerous at the time becase there was evidence that German interests were bidding for the common stock. Therefore, the stock dividend and subscription rights were given in non-voting common stock.[7]

In each of the first three issues of Class A and Class B stock, therefore, the primary object was the segregation of voting control, although the reasons for desiring this segregation varied. During the period 1917-21, a number of well-known companies followed the example of Bethlehem Steel in issuing non-voting common stocks, and the trend after 1921 became even more pronounced. It was noticeable, however, that as these issues became more frequent they began to take on other characteristics in addition to those having to do with voting control.

Types of Class A and Class B Stocks Appearing After the Depression of 1921

After the depression of 1921, the so-called Class A stocks began to take on the characteristics of preferred stocks.[8] Often they might be consid-

[6] The abnormally large war earnings of the company are shown in the following table:

	1914	1915	1916	1917
Balance available for dividends	$5,590,000	$17,763,000	$43,594,000	$27,320,000
% earned on 8% preferred	....	....	....	92.2
% earned on 7% preferred	37.5	119.9	292.4	168.6
% earned on common	32.6	113.1	286.3	40.5

[7] In 1922 the shareholders voted for a recapitalization plan under which the Class B was given voting rights.

[8] The terms "Class A preferred" and "Class B preferred" had been used to distinguish seniority in preferred stock issues, but the unmodified terms were typically applied to common stocks.

ered simply as preferred stocks under another name, while in other cases they fall somewhere between preferred and common. Examples of such issues include the "Cumulative Convertible Class A" stock of the Commercial Solvents Corporation, offered in June, 1922; the "Class A Participating Preferential Cumulative" stock of the International Utilities Company; and the "Class A" stock of the Symington Company, both of the latter sold in December, 1924. One reason for this change was to be found in the unpopularity of preferred stocks after the depression of 1921, when many of the supposedly "gilt-edged" issues suffered declines along with other stocks. Bankers were quick to recognize that one section of the investment public would buy a Class A stock "dressed up" to resemble a preferred stock, although they would shy at an old-fashioned preferred issue. The words "convertible" and "participating" in the indentures often proved effective. The buyers to whom such stock appealed were willing to regard capitalized earning capacity, actual or potential, as of more importance than tangible assets, while the buyer of preferred stock was often a stickler as to the latter. To be successfully floated, a preferred issue needed at least $125 of actual assets applicable to each $100 of preferred stock, but a characteristic of the Class A flotations was that the value of tangible assets was often less than the selling price. The Class A stock of the Symington Company, for example, sold to the public at $27.50 per share, while the net tangible assets totaled $23.05 per share. But the earning power, averaged for 1920-24, amounted to 2½ times dividend requirements. The International Utilities' Class A sold at $50 per share and was backed by net tangible assets of $42.15. Evidently the potential earnings more than offset this fact in the minds of investors.

From the company's point of view also, this type of stock had advantages. Although the entire sum desired could often not be obtained by selling common stock alone without prohibitive cost, yet, by adding some preferred stock characteristics to part of the common and calling it "Class A," the financing could be accomplished. The result was a corporate structure free from the restrictive provisions of a full-fledged preferred stock and obtained at a cost less than that of straight common stock financing.

Present Variability in Class A and Class B Stocks

The present variation in "Class A" and "Class B" stocks is illustrated by a study of 107 typical companies having issues of this kind.[9] Classified by industries, these companies included:

90	Industrials and miscellaneous 84%
16	Public utilities 15%
1	Railroad 1%

The dates of these issues ranged as follows:

1919	14
1920	15
1921	6
1922	9
1923	22
1924	24
1925	13
Unknown	4
	107

The different characteristics of the issues may be classified as follows:

[9] Donald C. Woods, "A Study of Class A and Class B Common Stocks," thesis, Harvard Graduate School of Business Administration, 1926.

1. *Relation to capital structure*
   Issues of Class A, Class B, and Preferred,
   45 companies, or 42% of total.
   Issues of Class A and Class B, but no Preferred,
   40 companies, or 37%.
   Issues of but one kind of common (called in some cases Class A, in others Class B),
   22 companies, or 21%.

2. *Par value of issues*

	Par value	No par value
Class A	32	62
Class B	18	65

3. *Preference as to assets and dividends*—Of the 85 companies having both Class A and Class B stocks, the former is preferred as to assets and dividends in 54 cases, or 66%, and in 23 of these cases the dividend is cumulative. In 23 cases (27%) it is specifically stated that there is no preference between the classes. Eight cases gave no information on this point. In 47 cases, Class A participates equally with Class B after the latter has been paid a dividend equal to the prior dividend on Class A.

4. *Callable and convertible features*—Of the 85 companies having both types, the Class A stock is callable in 17 instances, in 5 of which distinct provision is made for the accumulation of a sinking fund. In no case does the Class B stock appear to be subject to call or redemption. In 7 cases the Class A is convertible into Class B or ordinary common. In only one case is Class B convertible.

5. *Voting rights*—Of the companies having both types of stock, Class A has sole voting rights in 6 cases and Class B in 15 cases. But in 16 out of these 21 cases the expression "sole voting right" is hardly correct, since the non-voting class of stock has contingent rights. The contingency is usually the creation of prior liens or continued passing of dividends.

In 14 cases the two classes share the voting privilege jointly. The location of the voting privilege constitutes the sole difference between the two classes in only 15 cases.

In another study[10], the voting rights of stockholders of 75 representative companies issuing stocks of these types during the period 1921-25 were analyzed. The total number of shares outstanding totalled 25,000,000, of which 10,000,000 were Class A, 7,000,000 Class B, and 8,000,000 of other types of stock. It was found that 49.8% of the total number of shares outstanding have full voting rights, while 50.2% had contingent rights or no rights at all. Of the total amount of Class A stock outstanding, 15.6% had full voting rights, 31.4% had contingent voting rights, and 53% had no voting rights.

These studies show that at present no one characteristic distinguishes Class A and Class B stocks from each other, or from preferred and common issues. There is so much variation between individual issues that the terms indicate little more than that a company has departed from the old method of dividing its capital stock into two classes, preferred and common. The departure may have been one of name only or it may have been much more significant. In some cases the division was solely for the segregation of voting control, and the holder of the non-voting stock got no recompense for his sacrifice. In a large number of cases, however, the new types of stock simply represent intermediate stages between old-fashioned preferred stock and common stock.

These intermediate steps, although they may complicate the financial structure, give it flexibility, and indicate a refinement in the bargaining process between the company and the investor. The company wishes to allow investors as few rights as possible, and at the same time to get its capital cheaply. The investor in general wants as many protective rights as he can get, and at

[10] C. C. Head, "A Study of Industrial and Public Utility Flotations of Class A and Class B Stocks," thesis, Harvard Graduate School of Business Administration, 1926.

the same time the highest return and the best speculative possibilities obtainable. There are many sorts of prospective security buyers, from those who demand the safety of a first mortgage bond, and who are content with its low return, to those who want the speculative possibilities and higher yield of a common stock, and who are willing to sacrifice safety and protection.

Theoretically, it is to the advantage of both investor and company to have securities of every type, to satisfy every class of requirements. The junior lien, debenture, and income bond issues provide steps between first mortgage bonds and preferred stocks, while the various types of stock which we have been considering provide the stock purchaser with the particular provisions as to safety and income suited to his requirements and tastes.

While perhaps theoretically desirable, this lack of uniformity in stockholders' rights may lead to abuses if the investor is careless in his side of the bargaining. Professor Ripley has recently called the stockholder's attention to the fact that he was allowing the issuing companies to "put something over" in the limitation of his voting rights. The tendency to take away these rights and give him nothing in return is shown by the fact, mentioned above, that in 15 out of 85 issues of Class A and Class B stock the location of the voting privilege constituted the sole difference between the two classes. It is also very probable that the non-voting stock has been inadequately rewarded in other cases for the loss of its rights. Professor Ripley's criticism goes even deeper, and questions whether, from a social point of view, it is right for the voting privilege to be regarded as something that can be bargained away at all.

Relative Importance of Class A and Class B Stocks in Recent Financing

Either Professor Ripley has made the investor think more highly of his voting privileges, or the bankers and issuing companies think that he has done so. By calling attention to the bad features of centralized voting control, he has made the terms "Class A" and "Class B" unpopular, if one can judge from the recent figures for capital flotations. The increasing use of these terms was noticeable from 1921 to 1925, but during 1926 flotations under these names have taken a sudden slump, as is shown in the table below, which is reproduced from the *Commercial and Financial Chronicle* reports on capital flotations. The figures in this table include both new and refunding flotations.

These figures show only the relative proportion of issues that were *named* Class A or Class B and do not pretend to tell the proportion of non-voting stocks. To get any idea as to this, each individual issue would have to be examined. A study has already been mentioned in which 75 issues floated between 1921 and 1925 were examined, with the result that 49.8% of the total

	Number of Corporations Issuing All Classes of Stock	Number of Corporations Issuing Class A and Class B Stock	Total Stocks Issued, at Retail Selling Price	Class A and Class B Stock Issued, at Retail Selling Price	Percentage of Class A and Class B Common to Total Stock Issued
1921	65	1	$ 252,000,000	$ 500,000	.198
1922	189	4	624,000,000	8,160,000	1.37
1923	279	15	736,000,000	19,395,000	2.63
1924	289	17	866,000,000	45,732,000	5.27
1925	454	68	1,310,000,000	259,896,000	19.83
1926*	352	38	1,185,211,000	54,098,000	4.71

* Eleven months.

number of shares was found to have full voting rights, while 50.2% had contingent rights, or none at all. The proportion of stock which had been entirely disfranchised and had received inadequate recompense for the sacrifice must evidently have been fairly small, but was growing larger. That its growth has been checked might be inferred from the decline in the issues named Class A or Class B.

The mere decline of a certain style in naming stocks does not necessarily indicate that stocks of the same type will not be issued under a different name. Intermediate types between old-fashioned preferred and common stocks continue to be issued and are not necessarily dangerous in their characteristics. Undoubtedly Professor Ripley's articles have awakened the interest of investors in their rights that involve control, and they may not be so willing to part with them in the future.

Summary

Class A and Class B stocks were first used as a means of separating the voting and non-voting portions of common stock. This was the result of the tendency to segregate voting control which had been noticeable since the beginning of this century and had already shown itself in the disenfranchisement of preferred stockholders. After 1921, Class A stocks were issued with rights similar to those of preferred stocks. Sometimes they were merely preferred stocks under another name; sometimes they represented a position midway between preferred and common stocks. While Class A stocks were being given added prior rights in the direction of income and risk, Class B more nearly approximated ordinary common stocks, retaining in almost all cases its voting privileges. Issues of these stocks increased until the end of 1925, when criticism directed against the centralization of voting control caused bankers to stop naming stocks in this fashion. Stocks intermediate in type between old-fashioned preferred and common stocks and having a wide variety of provisions as to control, income, and risk are now outstanding and will probably continue to be issued, but the very fact that the names "Class A" and "Class B" have become unpopular seems to show an awakening of the public to the importance of the possession of voting rights by the stocks which it holds.

ELECTRIC POWER PRODUCTION AS AN INDEX OF BUSINESS VOLUME

THE business world has given increased recognition during the last few years to the value of indexes of the trend in general business conditions. This recognition is so recent and the character of available data is such, however, that none of the present indexes may be accepted as entirely satisfactory. The development of another index of business activity, therefore, is justified if the data on which the index is based are believed to possess characteristics that will result in a more accurate indicator. Since there is no standard whereby the accuracy of such an index may be tested, the acceptance and use of the new index

will depend upon the economic reasoning back of its construction and upon a comparison with other indexes of the same type, with an explanation, if possible, of any large differences.

Electric power production has a number of features that recommend its use as the basis of an index of general business conditions. Electrical energy is the only widely used commodity which is created and measured only as it is consumed, with the result that the curve constructed from this series is nowhere distorted by storage. One of the major uncertainties associated with the use of all other commodities as indicators of business activity is eliminated, therefore, in the use of this series.

Electrical energy attains a unique position in its relation to all industry by reason of the very great diversification in its use. Even pig iron, so widely used as to be considered indicative of industry in general, does not possess the wide distribution in use that may be accorded to power. And electric power consumption is in sufficiently great use to be fully representative of all power consumption. In 1925 it was estimated that approximately three-fifths of the industrial power consumed was derived from electrical energy; this proportion must be constantly increasing, since there has been an average annual growth of over 10% in power consumption. With this shift from other types of power to electrical power and with the increasing application of power to industry, electrical power production (and consumption) will become even more representative of business activity in the near future.

The series for power production is expressed in kilowatt-hours, a physical unit, and is therefore free of the influence of prices. The desirability of the elimination of this variable was demonstrated by the movements of various indexes during 1926; as a result of declining commodity prices, indexes containing a price factor were gradually declining also, although the physical volume of business was actually improving. The influence of the price factor is just as undesirable when it acts to accentuate the movement of an index in comparison with its movement in relation only to volume. Even deflation of certain series cannot be said accurately to remove the price influence, because an index of prices that is directly applicable to the particular commodity in question is very rarely obtainable.

The character of the data for electric power production is adapted to the construction of an index. The figures are promptly available at the end of each month and are practically an enumeration of all the power produced by central stations. Furthermore, totals are broken down into figures for each state of the United States, so that sectional indexes also can be secured. Classification as to the type of industry in which the energy is consumed suggests possibilities for still more specialized indexes of activity. This study, however, will be confined to a national index of general business activity.

Finally, the production of electrical power is influenced less than other indexes by small, irregular deviations which cannot be separated from the cyclical fluctuations. Electric public utility plants generally carry sufficient coal reserves to supply their requirements for a month or two, thereby eliminating the effects of a fuel shortage or transportation tie-up for short periods. The facilities for shifting from water-power to fuel or vice versa, and for the use of different fuels such as coal or oil, also operate to smooth off irregularities.

These factors, coupled with the wide diversity of uses and the increasing degree of interconnection, should minimize the disturbances caused by irregular deviations in the final result.

The series of data used in this study is the "Production of Electric Power by Public Utility Power Plants in the United States" as reported by the United States Geological Survey. These figures are distributed in the form of mimeographed sheets at the end of each month and are summarized in each issue of the *Survey of Current Business*. The industry is a public utility and subject to state regulation; standardized records are kept by each company in conformity to regulation, and the reports filed by the utility companies should be accurate. For this reason it is generally believed that the Geological Survey series is fairly complete and accurate.

The series, while available only since 1919, is the only one on record, and its value will of course increase greatly as it increases in length. The data are expressed in the unit of the kilowatt-hour, the accepted unit of measurement throughout the industry. The series is that of the production, which varies from actual consumption only by the amount of energy lost in transmission; since this difference between production and consumption amounts to a constant percentage, it has no effect on the final results.

Studies of the consumption of individual companies[1] have revealed that domestic consumption has a marked and regular seasonal variation but is influenced very little by cyclical fluctuations. Industrial consumption, on the other hand, reflects considerable cyclical fluctuation, as to be expected from its close connection to business activity. For the purposes of this index, therefore, it is desirable to segregate the energy consumption according to industrial and domestic use. Provided that this could be done accurately, the data on industrial consumption would provide a more sensitive index of business activity. Up to the present time, however, such a segregation of the data has not been made in the original figures; there is one such division based on estimates, but a study of the estimated

[1] "The Relation of a Public Utility to the Business Cycle," *Harvard Business Review*, October, 1924, pp. 8-14.

TABLE I. ELECTRIC POWER PRODUCTION

(Percentage of normal, corrected for trend and seasonal influences)

	1920	1921	1922	1923	1924	1925	1926
January	109.4	91.6	89.4	102.1	101.6	100.0	100.4
February	108.6	87.1	90.0	102.4	104.1	98.2	99.4
March	111.1	90.8	93.8	106.0	101.8	100.5	105.0
April	110.9	90.5	92.5	104.9	101.2	100.7	103.7
May	110.0	90.5	97.5	108.3	101.2	100.1	102.6
June	110.0	90.5	97.9	105.7	96.5	100.8	104.3
July	110.1	89.4	97.2	104.3	96.6	102.2	104.0
August	109.3	90.3	99.4	105.6	97.9	100.9	103.7
September	106.8	98.2	98.6	100.6	99.3	101.4	104.5
October	102.5	87.8	97.8	101.9	97.6	101.5	103.2
November	102.1	90.8	101.3	101.1	96.6	100.6	101.3
December	98.4	86.0	99.6	98.6	99.1	102.2	.....

Standard deviation for the series is 6.12.

series indicates that it is approximately a constant percentage of the total consumption. Because there would be no appreciable change in the final results and because of the additional lag of one month in the publication of the estimated series, the actual data in total for the production by central stations are the most satisfactory series available at present. Should the Geological Survey eventually make the classification between industrial and domestic consumption, it would be desirable to base this index on the series for industrial consumption and thereby increase its sensitiveness by removing the stabilizing influence of the domestic consumption of power.

In order to present the cyclical movement in electric power production for use as an index, it is necessary to remove the influence of long-time growth and of seasonal variation; irregular deviations may also occur, but these cannot be removed mathematically, and their influence, it has been pointed out, is small. The means of eliminating the effects of growth and seasonal factors are familiar statistical processes. and will be designated only briefly here. The brevity of the series justifies the use of only the more simple methods in the

TABLE II. POINTS OF GRAPH CURVES

Power Production	Harvard B	l.c.l. Carloadings	Power Production	Harvard B	l.c.l. Carloadings	Power Production	Harvard B	l.c.l. Carloadings
	1920			1922 (Con't.)			1925	
109	.93	111	98	−.28	101	99	1.13	105
109.5	1.07	110	98	−.20	99	100	1.40	106
110	1.20	103	99	−.11	97	100	1.26	106
110	1.47	101	99.5	−.18	98	100	1.17	104
110.5	1.71	99	100	−.11	101	101	1.08	103
110	1.91	103	100.5	+.25	103	101	1.23	102
109	1.88	104				101	1.37	103
108	1.73	104		1923		101.5	1.42	104
106	1.34	103				101.5	1.45	105
104	.90	101	102.5	.44	104	101.5	1.44	105
100.5	.39	99	103	.64	105	101	1.41	105
96.5	−.07	95	105	.71	106	101	1.46	106
			105.5	.80	106			
	1921		106	.77	105		1926	
			106	.60	103			
94	.49	93	105	.40	102	101.5	1.41	106
92	−.91	91	103.5	.15	102	102	1.35	105
90	−1.47	91	103	.06	103	102	1.15	104
90	−1.20	90	101.5	−.16	104	103	1.06	104
90.5	−1.16	90	101	−.17	104	104	1.02	103
91	−1.21	90	101.5	−.18	104	103.5	1.04	103
91.5	−1.24	91				104	.99	103
91	−1.22	92		1924		104	.91	103
91.5	−1.11	95				104	.86	103
90.5	−1.17	94	101.5	−.08	105	103	.76	.....
90.5	−1.29	93	101.5	+.01	106	.....	.55	.....
89	−1.48	91	102	.09	105			
			101	−.08	102			
	1922		99.5	−.26	99			
			98.5	−.36	97			
90	−1.48	93	98	−.23	97			
90.5	−1.42	94	97.5	−.13	99			
92.5	−1.26	96	97.5	+.05	102			
94.5	−1.03	98	98.5	.21	103			
96	− .74	100	99	.52	103			
97	− .47	101	99	.90	103			

determination of the cyclical fluctuations present in the series; a longer series may change this in the future.

The long-time growth, or secular trend, in the electric power industry has been very rapid since about 1900. A graphic study of the series indicates that the best trend line is a compound-interest curve; this implies that the growth has been at a constant percentage during the seven years covered by the series. The slope of this trend line was verified by comparison with a similar line extending over the period since 1902, from which time data are available by five-year intervals.

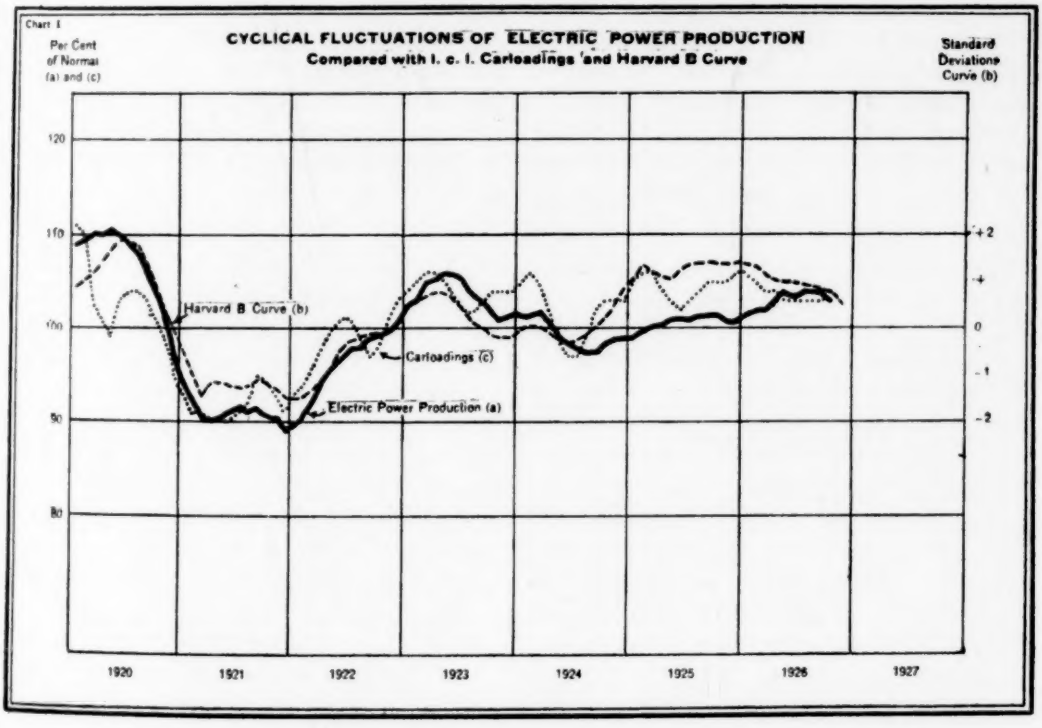
An index of seasonal variation was constructed to use in the elimination of the effect of the varying number of days per month, varying climatic conditions, and other seasonal influences. The link relative method appeared to give the best results, with a fair concentration of points about a representative number for each month.[2]

The amount of influence exerted on the series by these two factors having been determined, they can be eliminated, and the resulting series can be considered without the necessity for making allowances for them. This final series represents the cyclical movement in electric power production and can be compared with other indexes of business activity or with the series of a particular company. The monthly values of the curve, expressed in percentages of normal, are given in Table I. The curve for the index, as plotted on Chart I, is for the five months' moving average, in order to facilitate comparisons.

Chart I includes, in addition to the

[2] The seasonal index for this series was as follows:

January	106.7	May	96.7	September	98.3
February	96.2	June	95.6	October	105.2
March	101.2	July	96.1	November	102.6
April	96.3	August	98.9	December	106.2



curve for electric power production, the curves for two of the better known indexes of general business conditions already in use. Mathematical correlation has not been attempted in this study, as it is a complicated process and visual correlation yields sufficiently good results. Electric power production is represented by the heavy solid line, the revised Harvard B curve by the broken line, and l.c.l. car loadings by the dotted line.

Very close correlation is seen to exist between power production and the Harvard curve of business until the middle of 1924; from that time on, the Harvard curve runs well above the power curve, but declines to meet it in the latter half of 1926. The difference may be attributed to the influence of the price series which make up the Harvard index and to the stabilizing factor of domestic consumption.

Good correlation is evident for the same period between power production and l.c.l. carloadings. Subsequent to the middle of 1924, carloadings run above the power curve, but recede early in 1926 to about the level of the power curve; serious doubt of the approximate accuracy of the index for electric power production is, therefore, not raised. The year 1925, furthermore, will be recalled as one but little above normal in general business as a whole.

The curve for power production was also plotted with the curves for pig iron and the Harvard index of the volume of manufacture. Very close correlation was apparent between power production and these two curves until the end of 1924. Pig iron then sank below the power curve, while the volume of manufacture ran above in much the same manner as the curve for carloadings. The curve for power production, however, fluctuated within a much narrower range; this may be accounted for by the wider diversity in the uses of electric power and the stabilizing influence of domestic consumption.

The degree of correlation between the curve for power production and these several other indexes indicates conclusively that this index is to be included in the business group as distinguished from the speculation and money groups. Economic reasoning confirms this group as the logical place for the index. Complete reliance, of course, is not to be placed on any one index, because it may be subject to the influence of unusual conditions or new developments at any time.

CASE STUDIES IN BUSINESS

KEEPING IN PLACE IN THE STYLE CYCLE

STYLE is assuming a larger and larger importance in merchandising. As this element acquires greater and greater significance, methods of production and of distribution require modification in order that the product and the consumer's demand for it may be brought together. Industries which a decade ago were but little concerned about styles are now facing new and serious problems that have been introduced solely by the fact that their product has changed from a staple to a style good. Some authorities are outspoken in their opinion that the recent generally unsatisfactory condition of the cotton textile industry in America is due largely to a failure to recognize the increasing dominance of the style factor.[1] The "hand-to-mouth" buying that has been condemned so frequently and forcefully as one of the main roots of poor business, in many cases is not motivated by a lack of confidence in business stability, but is a sound protective measure against the risk of shifting styles.

The appeal of style in merchandise, being founded on the instinct of self-display, lives deep in the human emotions. Modern technical innovations have produced new materials and furnished ways to transport them and to broadcast information about them, but the latent desire that responds to these stimuli is as old as the human race itself. It seems clear, therefore, that the influence of style will not wane, but, on the contrary, will deepen its significance and widen its application as further developments in productive and distributive technique occur.

The element of style is present in many different classes of merchandise. Even so prosaic a product as bricks is not free from it, and the brickmaking industry underwent revolutionary changes in adapting itself to the change in demand from pressed to rough-cut bricks. House furnishings carry style in large degree; houses themselves are affected with it, but in wearing apparel, particularly that of women, it looms largest. While the cases studied in this article deal only with the latter kind of goods, the principles brought forth are equally applicable to other lines.

To the most casual observer the cyclical nature of style movement is apparent. A style, say in women's apparel, appears; it increases to a climax; it wanes; it disappears, giving way to another style. In the life of a successful style, from the time it appears until it becomes extinct, three stages are recognizable. The first phase is when its appeal is to the desire for distinctiveness in the buyer. At this stage the garment is sold usually in the exclusive specialty shops and is fashioned of high-grade materials and workmanship; the idea of exclusiveness characterizes it, and it is sought by the discriminating few to whom the cost is relatively immaterial as compared with the satisfaction of the desire for leadership in setting fashions.

The second stage of the style cycle is reached when the model is copied

[1] *Distribution of Textiles, Bulletin No. 56*, Harvard Bureau of Business Research, p. 190.

for more wide-spread sale, particularly in the better department stores. Emulation has become the buying motive—a desire to conform to the prevailing mode. And here enters a peculiar paradox; the exclusive garment can never be successful in conferring upon its owner the distinction of setting the style until it becomes the prevailing mode, and as soon as that happens and the model is widely copied, its distinctive qualities cease to exist, and for it the first stage of the style cycle is over.

The style enters the third phase of the cycle when, after achieving success in the emulation stage, the garment is made in cheaper fabrics and produced in large quantities. Lower-grade department stores, bargain basements, and certain types of mail-order houses operate in this stage. The buying motive of the consumer is that of keeping in style at low cost—economical emulation. When this stage is reached, the second phase is ended and the style proceeds rapidly and certainly to extinction.

Three cases are analysed to illustrate certain principles of merchandising that rest upon the style cycle.

Alton Company [2]

Early in January, 1922, the silk dress goods department of the Alton Company, a women's high-grade specialty store, received some calls from customers for sport silks of heavy texture in various weaves. Similar goods in various grades and colors had been sold extensively during 1921. From the store's records of February, March, and April, 1921, it was found that the department had sold approximately 3,000 yards of these sport silks at a substantial profit. Although the current trade bulletins were not stressing sport silks, particularly in the expensive qualities, several manufacturers of novelty silks were producing these materials. The silk buyer desired to place an order for sport silks, because he believed they would sell at a profit. The merchandising manager was doubtful as to the desirability of placing this order. Although he agreed with the buyer that the profits from the sale of this silk material during 1921 had been exceptionally favorable, he thought that he could distinguish a distinct trend away from sport silks, and that a loss from mark-downs would result if the order were placed.

Sport silks had become popular during the spring season of 1921. Three small, exclusive specialty shops located approximately six blocks from the Alton Company had been the first in the city to offer such silks. In January, 1921, after the few patterns offered by these stores had been sold at high prices, the Alton Company had purchased about $3,000 worth of the silks. Although it had been necessary to sell them at high prices because of their high quality, the store had experienced no difficulty in disposing of them; cheaper sport silks had not appeared on the market. There had been no competition at first from either the near-by specialty stores or the department stores.

Early in February, 1921, two specialty stores, competitors of the Alton Company, had advertised similar materials at approximately the same prices as those offered by that company. The demand for these high-grade sport silks had become stronger during February and had increased heavily during March. Toward the last of March, two large department stores selling

[2] *Harvard Business Reports* (Chicago, A. W. Shaw Company, 1926) Vol. 2, p. 255.

medium-price merchandise had advertised sport silks at substantially lower prices than were asked by the specialty stores. The comparison bureau of the Alton Company had found these silks to be much lighter and of poorer quality than the silks that had been on the market previously. Soon these cheaper sport silks had been sold not only by the near-by department stores which carried a medium grade of merchandise, but also by other stores that dealt in cheap grades. Although the sport silks shown by these stores had been inferior to those sold by the Alton Company, nevertheless, the patterns and weaves had been sufficiently similar to cause a decrease in the company's sales of silks to customers demanding exclusive styles. The demand, however, for the high-priced sport silks had not entirely ceased when the season closed.

The merchandise manager was convinced that sport silks were following a definite cycle of popularity. First they had appeared in the exclusive specialty shops, then in specialty stores like the Alton Company, and finally in department stores and dry-goods stores. Gradually, as the season had progressed, the quality of the sport silks had been reduced to meet the demand of customers with smaller incomes. The merchandise manager was convinced, furthermore, that this movement through 1921 toward cheaper sport silks indicated that the clientele to which the Alton Company catered would not purchase sport silks in any quantity in 1922. He believed that the calls that the company had received in 1922 for sport silks were from a few customers who followed old styles. Since the majority of the customers of the Alton Company demanded the latest styles and since the store had established a reputation for style leadership, the merchandise manager thought it unwise to buy novelty silks that had been popular the season before.

In an attempt to gage the popularity of sport silks in 1922, however, the merchandise manager spent three days on the selling floor. At the end thereof he reported to the buyer that he was more convinced than ever that a loss would result if sport silks were purchased. He had observed that the type of customer that had purchased the high-quality sport silks the year before now was inquiring for sport woolens. This apparent tendency was in accordance with the prediction of several fashion publications, and also with the ideas which the merchandise manager had obtained from the best authorities on style in the markets. The comparison bureau, furthermore, had reported that few patterns of sport silks were being shown in small specialty shops. The merchandise manager explained to the buyer that the company was obliged to guard against any action that would give the trade a wrong impression as to style. Aside from the financial loss, the company had its reputation for style leadership to protect, and it could not afford to advertise sport silks if they were not the most up-to-date materials that could be secured, even though some demand existed for them.

Contrary to the advice of the merchandise manager, the buyer, when offered a good assortment at an attractive price, placed an order for sport silks amounting to $2,000. The silks were received and placed on sale in February. Toward the middle of March a few sales were made. After that time only a few yards were sold, and in June the department was obliged to place about one-half of the sport silks on sale at a reduction which re-

sulted in a substantial loss on the entire purchase.

Commentary

This case describes the experience of a women's high-grade specialty store that encountered unsatisfactory results in an endeavor to merchandise a particular style in the later stages of the style cycle. The phases of the cycle are well marked in the case. The "distinctiveness" phase was indicated in the sales in the small exclusive specialty shops and in the Alton Company's sales of 3,000 yards in the early part of 1921; the "emulation" stage in the increased demand for sport silks in February and March; the "economical emulation" stage by the advertised sales in the lower-grade department stores during the latter part of March. The very success with which the Alton Company disposed of its first purchase of sport silks should have been taken as an indication that the forces that would bring on the second stage, and thereby extinguish the first, were active to a marked degree. The merchandise manager's observations of the demand for sport woolens in 1922, coinciding with advance style information, was conclusive evidence of the advent of a new mode. The few inquiries received from customers for sport silks early in 1922 were not representative of the demand of a majority of this store's clientele. Unless it wished to become an entirely different type of store, the Alton Company could not expect to follow with success the policy of endeavoring to merchandise in the later stages of the style cycle.

Farrington Company[3]

The Farrington Company, founded in 1878, was the largest department store in an eastern city. It was one of the most conservative stores in the city, and it had a stable clientele. Catering to the medium and high-class trade, its business had grown until the annual volume of sales was close to $30,000,000. The store was located in the heart of the department store district. In January, 1924, the buyer of women's suits had to decide whether more suits were to be purchased for the spring season; a few had been purchased in December. In the event that suits became popular, a large stock was necessary in order that the demand might be met.

It was generally recognized among buyers of women's suits that the last good suit season in this country had been in 1919. The failure of suits since that time was attributed to the popularity of dresses. They had been so attractive and were made to sell so cheaply that they were preferred to suits.

Most of the styles that achieve a vogue in this country originate abroad. In the fall of 1923, suits were worn by the women at exclusive resorts such as Deauville, Nice, and Cannes. In October a habit-maker named O'Rossen brought out a severely tailored women's suit which proved to be popular abroad. Soon after, the fashion publications, such as *Harper's Bazaar* and *Vogue,* were predicting a suit season for spring.

The *Dry Goods Economist,* December 22, 1923, said: "Leading among all spring fashions is the revival of the strictly tailored suit. As a veritable rage the O'Rossen suit has found its way to department stores and specialty shops alike."

By the first of January, 1924, practically all the style experts and suit manufacturers were pushing suits.

[3] *Harvard Business Reports* (Chicago, A. W. Shaw Company, 1926) Vol. 2, p. 259.

Salesmen were sending in substantial orders. Some manufacturers who had gone into other lines turned again to making suits. The models shown to suit buyers were different from those shown for a long time past, and the range for selection was wider.

While the highest-class specialty shops in the city in which the Farrington Company was located had stocked a few O'Rossen suits, the sales of these suits at this time did not indicate their prospective popularity for the spring season. The suit season at best would be about six weeks in length, the height of the demand coming the week before Easter.

The buyer for the women's suit department of the Farrington Company purchased additional suits in January on the expectation that a good suit season was in prospect. The total sales for the season, however, were less than they had been for the same period of the previous year, which had not been considered a good suit season.

Commentary

This case hinges upon the premature purchase of a new style, an experience common to a number of department stores in the spring of 1924.

In consequence of the lack of popularity of women's suits, the suit business was in a depressed condition. Manufacturers, therefore, immediately seized upon the O'Rossen suit as soon as this style showed signs of success abroad. In this country, O'Rossen suits were introduced practically simultaneously into high-grade specialty stores and into general department stores. Thus, this particular style did not have a chance to go through the "distinctiveness" stage. A successful traverse of this stage is a requisite for development into the "emulation" stage, which is the point where general department stores can begin to sell a particular style effectively. The O'Rossen style of suit was not given opportunity to develop naturally; hence, it was a failure in department stores such as the Farrington Company.

Allernet Lace Company[4]

The Allernet Lace Company, through its close contact with style-originating centers in Europe and its excellent designing department, had an established position of style leadership in America. As a result, its patterns were copied extensively by rival companies, a situation that assumed such serious proportions by June, 1922, that the management felt it necessary to make a special study of conditions with a view to remedying the evil.

It was found that the company's own customers were the source of samples from which designs and styles were copied. The company marketed its lace through a selling agency in New York, which used the samples made up each June and December to show to the garment manufacturers and to the wholesale trade. The wholesalers required samples to show to their retail customers, and in many instances, it was found, had passed on samples to other lace manufacturers to encourage competitive prices. The Allernet Company had explained to the wholesalers that, since the value of lace patterns depended to a large extent upon their exclusiveness, such a policy was ruinous to the wholesaler's own lace trade; but

[4] *See Harvard Business Reports* (Chicago, A. W. Shaw Company, 1925), Vol. 1, p. 243, for analysis of other merchandising aspects of this case. Only so much of the case as is necessary to cast in relief the style cycle aspect is given here.

the practice of giving away samples continued. Legal protection of designs was found to be possible, but was expensive and of doubtful benefit and expediency from a business standpoint.

Commentary

It seems clear that the Allernet Company's difficulty lay in the fact that its sales policy was inconsistent with its choice of the phase of the style cycle in which to operate. The company had organized itself to maintain style leadership through the distinctiveness of its designs. By selling to wholesalers it was choosing customers whose aim was to buy on the basis of competitive prices and to stress volume of sales to retailers. If the company desired to retain its style leadership, it should have confined its selection of customers to retailers and cutters operating in its own stage of the style cycle. Such customers would be equally interested with the Allernet Company in preventing too wide-spread use of the designs. Furthermore, since such customers would also be recipients of advance style information, they would be useful to the company in sensing future style trends.

Direct sale to such customers was called for; the New York selling agent was a source of delay in distribution and an insulating medium in preventing the direct contact essential in merchandising distinctive style goods.

Summary

Several general principles may be drawn from the foregoing cases.

1. A manufacturer or a merchant of style goods must recognize his position in the style cycle and govern his production and distribution policies accordingly. All three cases exemplify this.

2. The same store cannot cover successfully both the "distinctiveness" and the "emulation" phases of the style cycle. Alton case.

3. A women's high-grade specialty store must rely largely upon appeal to the buying motive of distinctiveness. Alton case.

4. The success of a style in the preceding stage is requisite to its development into the next stage of the cycle. Farrington case.

5. Merchandising objectives as well as methods are different in each of the three phases of the style cycle. Greater cooperation will be secured if the several links in the merchandising chain operate in the same stage of the cycle. Allernet case.

CONSUMER ADVERTISING—FABRICATING MATERIALS

SOME of the most interesting of advertising problems are those connected with the advertising of fabricating materials or parts to the consumer. These fabricating materials or parts are sold for the most part to manufacturers for inclusion in consumers' products; yet the advertising of these parts is often directed at the consumer of the finished product in an attempt to stimulate a market for the fabricating part. The case of the Barbour Welting Company furnishes an example of a manufacturing company

which decided that it could increase the sales of its product if it advertised directly to the consumer of the finished goods. It is the purpose of this study to determine, if possible, the conditions or factors which determine whether or not consumer advertising of such an industrial good—a fabricating material—is beneficial to the advertiser.

The Barbour Welting Company

The Barbour Welting Company is engaged in the manufacture of high-grade Goodyear shoe welting. The welt is a narrow strip of leather approximately one-half of an inch wide and one-eighth of an inch thick, to which the upper and the sole of the shoe are sewed. The company also manufactures a cork welting which differs from the ordinary welting in that it has a ridge approximately three-sixteenths of an inch high along one side. The company also owns patents on a new form of welting that resembles in appearance the cork welting that the company makes. This welting, however, is a solid single piece and is more effective than the cork welting in sealing the seam against dirt and moisture. On the outside of the completed shoe the ridge can be seen between the sole and the upper. This ridge, besides sealing the seam, also serves as a retaining wall to hold the shoe in shape. The welting is manufactured by special machinery and is completely protected by patents. It is sold to shoe manufacturers under the trade name of "Barbourwelt."

The company began to sell the new welting in February, 1924, and decided to advertise to the final buyers of shoes. The advertising program included four full-page, black-and-white insertions in the *Saturday Evening Post* at monthly intervals, and various insertions in *Vogue* and *Vanity Fair* for a period of three months. Neither the Barbour company nor any other company that manufactured welting had ever attempted to advertise to consumers before. The company expected the advertising to create a consumer demand which would eventually be reflected in sales of the new welting to the shoe manufacturers. Prompted by a retail demand, the retailers would ask the manufacturers for "Barbourwelt."

The advertising in *Vogue* and *Vanity Fair* was not continued after the first season, the spring of 1925. The *Saturday Evening Post* advertisements were continued because it was believed that they reached more retailers and more consumers than either, or both, of the other magazines.

The advertisements stressed the point that shoes made with "Barbourwelt" kept the feet dry in wet weather. This appealed to the buying motives of maintaining and preserving the health, and of securing personal comfort. It was also emphasized that a shoe made with "Barbourwelt" retained its shape longer than one made with ordinary welting. This suggested pride in personal appearance and durability for those shoes which were equipped with this particular make of welting. Convenience in purchase was also emphasized. It was stated in the advertisements that practically all manufacturers of welt shoes made models with "Barbourwelt."

The Barbour Welting Company had advertised ordinary Goodyear and cork welting in trade papers for several years. The new welting had not been advertised in trade papers at the time the national advertising was begun in the *Saturday Evening Post*. Advertisements of regular welting appeared ap-

proximately once each month in three trade papers. During 1922 and 1923, $16,000 had been spent for publicity; this included the rent of the sales office in Boston. During these two years, 1,000 circulars describing Goodyear and cork welting were sent each month to manufacturers who had previously bought from the company, and to a list of the largest wholesalers and retailers in the country. The advertisements and circulars were prepared at the factory, as no advertising agency was employed.

When the company began its national advertising to consumers, it continued to advertise in the trade papers but it featured the new "Barbourwelt" rather than the ordinary types of welting. It also increased other types of advertising to the retailers and manufacturers, such as copies of the advertisements that appeared in the general magazines, and numerous pamphlets that described the processes of making welt shoes and the advantages which "Barbourwelt" possessed over ordinary welting. Window displays were also furnished the retailers. These illustrated the part played by "Barbourwelt" in the manufacture of shoes. Extra large shoes were made up and loaned to the retailers for display purposes. These shoes were large enough for the public to see exactly what "Barbourwelt" looked like and how it differed from the ordinary welting.

The company also employed missionary salesmen to call on shoe retailers and to impress upon them the advantages of purchasing shoes made with "Barbourwelt." A sales force was employed to sell to the manufacturers of shoes in all parts of the country and abroad. The company was selling the new welting to over 300 shoe manufacturers. This number included the greater part of the manufacturers of welt shoes whose business was desirable. Included in this list were some of the largest shoe manufacturers in the country, makers of both high- and low-grade shoes. The Barbour Welting Company had 28 competitors, but the latter could not manufacture and sell a solid one-piece welt like "Barbourwelt," since the process was patented. Some manufacturers made a welt that resembled the "Barbourwelt" in appearance, but the ridge was sewed to a strip of ordinary welting and it did not keep out the moisture or hold the shoe in shape.

The sales manager was very well satisfied with the results of the advertising. By March, 1926, the company had sold 9,000,000 yards of the "Barbourwelt," which was a quantity sufficient to make 9,000,000 pairs of shoes. Total sales of welting had not increased greatly, but the "Barbourwelt" sold for a higher price than the ordinary welt. The price of the "Barbourwelt" was 16 cents a yard, which was three times the price of the Goodyear welting. Cork welting sold for 21 cents a yard. The additional cost of the "Barbourwelt," it was stated, was not a factor of great sales resistance in selling the product to the shoe manufacturers. The use of "Barbourwelt" instead of the ordinary welting meant larger profits to the Barbour Company.

The Strategy of Consumer Advertising

It was the desire of the Barbour Welting Company to increase the sales of "Barbourwelt" to the shoe manufacturers by the use of consumer advertising. Apparently, the advertising resulted in larger sales. A discussion of the strategy of this advertising and the manner in which it worked is the

content of the remainder of this case.

The purpose of the advertising by the Barbour Welting Company has been to stimulate sales. There may be several ways by which consumer advertising might help to accomplish this. The first method would aim to influence the consumer, and through him the dealer and the manufacturer of shoes. Let us follow through the theory of such influence. The consumer makes inquiries of his local dealer. After the retailer has received several inquiries from his customers, he in turn talks with the manufacturer's salesman. The salesman informs the manufacturer, and after the manufacturer has received several indications that a demand exists for "Barbourwelt" he places an order for it with the Barbour Welting Company. The demand in this case is generated by the consumer. If the advertising will influence the consumer to the extent that he will call for or inquire about "Barbourwelt," the shoe manufacturer will be inclined to buy the product, and the advertising will fulfil its purpose. It may not be necessary that the influence on the consumer will have to be as strong as this. The advertising may build up the brand name of the manufacturer and gain the general favor of the buying public so that when he uses as a sales point the fact that his shoes are equipped with "Barbourwelt," the consumer recognizes it to be a point in the favor of the manufacturer's product. In this way the advertiser gains a recognition for his product that may be valuable in reducing the sales resistance of a new product.

A second method by which advertising may increase the sales of "Barbourwelt" is through the influence it will have directly on the manufacturer. When the manufacturer realizes that considerable national consumer advertising has been done, he may be under the impression, rightly or wrongly, that he may be able to increase his sales if he uses the welting. Consumer advertising by the maker of the part in this case makes it possible for manufacturers of shoes to use the inclusion of the part as a selling point for his shoes with dealers and consumers. By constantly impressing on the consumer's mind the merits of the particular part, the way is laid for aggressive sales policies by the manufacturers of shoes. This, again, involves a recognition of the product in the mind of the consumer.

There is still a third plan that might motivate the advertising. The major motive in prompting the campaign may be that the retail dealer is particularly susceptible to national consumer advertising. The retailer sees an advertising campaign inaugurated, and he feels that there is an opportunity to take advantage of the expenditures of the advertiser. Without waiting to see if there will be a consumer demand, the retailers all over the country may ask their respective manufacturers to make shoes with "Barbourwelt." When the retailers are stocked with shoes made with "Barbourwelt," they cooperate with the advertiser and feature the product. In this case, the demand starts with the retailer who anticipates a demand for the product because it is advertised. National advertising is held over the retailer's head as a concealed threat, or, rather, as a lure to get him to place orders with the manufacturer for shoes made with "Barbourwelt."

In considering the value of either the plan of directing the advertising to the manufacturers, or the plan of directing it to the retailers, the importance of

the consumer's attitude towards the product cannot be overlooked. In both of these instances, the strategy of the advertising disregards to a large extent the response of the consumer to the advertising—no consumer insistence is believed necessary. It has been pointed out that a consumer recognition created by this advertising may reduce the sales resistence of "Barbourwelt" and enable the company to gain an entry into the market. This is an important service of the advertising. Granting, however, that some recognition may be obtained, it does not follow that continued advertising thereafter will produce increasingly better results.

Shoe manufacturers and retailers are not going to maintain a permanent interest in "Barbourwelt" unless it does one of two things. It should either give them a superior product, that is, improve the quality of the shoes; or it should give them a product more salable because it is equipped with "Barbourwelt."

The Barbour Welting Company can go direct to the shoe manufacturers with its product and explain to them the manner in which "Barbourwelt" makes their shoes more serviceable. They can be convinced of superior quality on rational grounds. Most manufacturers are willing to adopt new parts that add quality to the finished product if at the same time the costs of the finished product are not materially increased. The Barbour Company already has the sales force with which it can reach the shoe manufacturers, and, in most cases, already sells them other types of welting. In addition, consumer advertising seems to be an unnecessary expense for convincing either the shoe manufacturers or retailers that "Barbourwelt" improves the wearing qualities of shoes. It costs approximately $7,000 for every full-page insertion in the *Saturday Evening Post*, while the same amount of advertising in a trade journal costs much less. The Barbour Welting Company is paying for advertising in a magazine with a circulation of 2,500,000 copies, while a trade paper with a circulation of only a few thousand would reach as many manufacturers and retailers, and the rate would be proportionately smaller. Consumer advertising is expensive and is not necessary to convince either the shoe manufacturers or shoe retailers that the quality of the shoes would be improved by the use of "Barbourwelt." The company should choose the type of advertising to correspond to the purpose of that advertising.

"Barbourwelt" gives the manufacturers and the retailers a more salable product only in so far as the consumer recognizes it as a desirable thing to include in the product. If the consumer will be more inclined to accept shoes made with "Barbourwelt," or if he will prefer or insist on shoes made with it, the product will be more salable. If the incorporation of "Barbourwelt" makes shoes more salable, the manufacturers and the retailers will maintain a permanent interest in it.

In either of these two points it is evident that the consumer must be considered if the advertising is to obtain satisfactory results beyond the introduction into the market. The effect of the advertising on the consumer will be considered next.

Probable Effect of the Advertising on the Consumer

There are several factors indicating that a national advertising campaign directed to the consumers of shoes will

be ineffective in stimulating an insistence for "Barbourwelt." In the first place, the welt is a relatively unimportant part of the shoe. A study of the buying motives for shoes reveals that they are bought because of their style or their appearance, their fit, their quality and wearing properties, or because of the reputation and service of the dealer with whom the consumer is in the habit of trading. The importance of these buying motives is such that the consumer will not be inclined to change his brand because the shoe is or is not made with "Barbourwelt." "Barbourwelt" may add to these buying motives and influence some customers. The important point, however, is that the consumer does not consider the welting in making up his mind which brand of shoes he desires. The welting is relatively so unimportant in the make-up of the shoe that it will not influence the purchaser in his choice.

In addition to the preceding point, it is probable that advertisng the welt is ineffective, because it is physically impossible to place the trade-mark of the manufacturer on the welting in such a manner that the consumer can see it. There is no name to remind the purchaser that the welt in his shoes is genuine "Barbourwelt." The fact that a manufacturer cannot place his trademark or trade name on the article is a severe handicap in creating goodwill, and this fact reduces the effectiveness of the connection between the advertising and the product.

Another reason why it is probable that advertising "Barbourwelt" to consumers will not create an insistence is that the welting cannot be separated from the shoe proper. The welting becomes a permanent part of the shoe. If the part is branded and the finished product is also branded, there arises a conflict of brands. In this case, the welting cannot be visibly branded, but if it could, the brand of the shoe still would be the more important. Where the part is relatively unimportant and cannot be separated from the finished product, the maker of the finished product assumes all the responsibility for it; therefore, it is highly improbable that the brand of the welting will have much influence in the sale of the shoe.

Another important reason why consumer advertising is weak is that no replacement demand exists for welting. If a replacement market existed, there would be more justification for consumer advertising. In this respect it differs from rubber heels, storage batteries, radio tubes, and many other products which have a large and frequent replacement demand although still fabricated parts from the standpoint of original manufacture. For these articles, advertising to the consumer is an advantage because it is the consumer who buys the replacement part after the original part wears out. It is impracticable to repair the shoe with "Barbourwelt" if the original welt wears out. Furthermore, the welt is not a part that is subject to much wear, as is, for example, the sole. This point alone is not enough to condemn the policy of advertising of the Barbour Welting Company, but it is one feature that makes is very improbable that a consumer demand can be created by advertising.

These factors—namely, the unimportance of the welting as a part of the shoe, its lack of influence in adding effective buying motives in the purchase of shoes, the physical impossibility of incorporating the trademark on the product, the fact that the

welting cannot be separated from the shoe, the loss of the identity of the part in the finished product, and the absence of any replacement demand—detract from the likelihood of the creation of a consumer insistence by advertising. If a consumer insistence cannot be created, it seems from this analysis that the consumer advertising of "Barbourwelt" in itself will not permanently increase the company's sales.

It is well to note here again that consumer advertising might have some effect in helping to gain the acceptance of a welt that creates a noticeable change in the appearance of a shoe. If "Barbourwelt" were advertised at first as a style good, it might be easier to get the consumers to accept its introduction as a style feature. This cannot result in a permanent insistence for the welt because style is not a permanent quality. Such advertising has an influence in stimulating the sales of a product for a relatively short period of time, or in gaining enough recognition for the product to facilitate its introduction into the market.

Reasons for the Success of the Advertising

From this analysis of the product, it is concluded that a consumer demand of any magnitude cannot be created by advertising "Barbourwelt" to the consumer. This conclusion has been verified by inquiries directed to several large shoe retailers in the city of Boston. All of them reported that only a few inquiries for "Barbourwelt" had been received, and that no consumer insistence for the product had been created. The Barbour Welting Company did not feel that the advertising had resulted in a large consumer insistence, although it believed the advertising was successful.

If the advertising did help to increase sales, what was the reason? Although an analysis of the problem indicated that the advertising would not result in increased sales by creating a consumer insistence, nevertheless sales of "Barbourwelt" have increased at a surprisingly rapid rate. This increase in sales may have been the result of the missionary selling rather than of the advertising. It cannot be determined exactly what proportion of the increase was due to missionary effort and what proportion to the advertising, but a reasonable assumption is that they supplemented each other.

There seems to be some basis for the belief that the retailers would respond to the national advertising. Because the retailers believed that the national consumer advertising by the Barbour Welting Company created a good-will towards "Barbourwelt," they were glad to cooperate in the publicity and to push the product in an active manner. The retailers' belief in the efficiency of national consumer advertising caused them to stock shoes made with "Barbourwelt." The retailers' requests for "Barbourwelt" to the manufacturer were met with a ready response. The increased cost to the shoe manufacturers was so small a part of the total cost of the finished product that continued sales resistance by the manufacturers was not to be expected. Therefore, shoe retailers stocked shoes made with "Barbourwelt," and when a customer entered the store to purchase his favorite brand of shoes, he was asked if he would like a model made with "Barbourwelt." Advertising had made the consumer familiar with the product, and if the particular shoe he desired and the reasons why he wanted

it coincided with the buying motives for "Barbourwelted" shoes, the probability of a sale was increased.

The advertising served a purpose in that it was the force or stimulus that induced the retailers to demand "Barbourwelted" shoes of the manufacturers. The major reason that the advertising provided this incentive was that the retailer was sensitive to national advertising to the consumer. The demand from the retailers started before the advertisements actually appeared. Immediately after the dealers had been told by the Barbour Company that it was going to advertise, they began to place orders. Part of the success of the advertising was due to the faith of the retailers in national consumer advertising, and in this case probably to an unjustified faith in the efficacy of the advertising.

Conclusion

From an analysis of the situation, consumer advertising would not seem to be of permanent value in this case; nevertheless, there are several considerations that make the introductory advertising successful in so far as success means increased sales. In the first place, initial success does not require that a consumer insistence be created. If consumer recognition is created, the sales resistance will be reduced and introduction into the market will be facilitated for the product. The advertising is influential in getting the manufacturers to substitute "Barbourwelt" for another type of welting made by the same company and sold to the same customers. In the second place, national advertising is the force that induced the retailers to generate the increased demand for "Barbourwelt." This advertising influenced the retailers because they believed national advertising creates a good-will towards shoes made with "Barbourwelt." Advertising in trade papers would not produce the same incentive to the retailer, although the cost would be smaller.

From the long-time point of view, the wisdom of this policy of advertising "Barbourwelt" to the consumer can be questioned. It has been noted that if manufacturers and retailers are to maintain their interest in "Barbourwelt," the consumer must respond to the advertising and insist on the product as a part of his shoes. Otherwise cheaper welting will be used. It has also been noted that it is very improbable that a consumer insistence can be created for "Barbourwelt." The conclusion, then, is that consumer advertising may be successful for the introduction of a new fabricating material by capitalizing the dealers' faith in consumer advertising and by decreasing the sales resistance that consumers present to a new, untried product. For a fabricating material that is not different from other products of the same type, and that is an old established product, it is doubtful whether consumer advertising would be effective.

It is not to be expected that this same conclusion can be applied to all kinds of fabricating materials. Each case has to be decided separately on the specific conditions pertaining to the particular product. Some of the more important factors to consider, however, have been indicated.

LEGAL DEVELOPMENTS SIGNIFICANT IN BUSINESS

THE CORPORATE RECEIVER[1]

Introductory

FROM time to time men are appointed for the conduct of private business under the supervision of state or federal courts. Some of these positions, like that of the administrator, may require nothing but a knowledge of the requirements of law in order to perform adequately the required functions; others, like that of the trustee, require mainly a business ability and a business judgment in order to be really successful. The position of the corporate receiver seems to steer somewhat of a middle course between law and business requirements. There is controversy regarding this, however, since to some it seems that the knowledge of law required is so great that only a lawyer should be appointed as receiver, while others see the requirement of a knowledge of business so great that only a business man should, in their opinion, be appointed as receiver if the receivership is to be successful. A thorough analysis of the matter would indicate that there is right on both sides. The receiver not only must have a knowledge of business, but also he must know the legal advantages and disadvantages of his position if he is to carry out the receivership successfully.

In the following paragraphs an effort is made to picture the related business and legal conditions under which the receiver who is appointed by a court of equity must carry through the task which has been assigned to him. His business function of operating the property in the best interests of all parties concerned is both facilitated and rendered difficult by the legal advantages and disadvantages which he finds in his path.

Nature of the Corporate Receivership

The receivership may be created by the court in a number of ways. For instance, a creditor who has been unable by other means to obtain settlement of the debt which is due him may file a suit which sets forth this fact, and the accompanying prayer for the appointment of a receiver indicates that the step is necessary for the preservation of the property intact pending settlement of the suit.

In practice, the receivership is frequently created at the instance of the board of directors of the corporation itself through the medium of a friendly creditor and a "friendly" court,[2] for the purpose of raising an umbrella over the property to keep off individual creditors, and to provide a rehabilitation period during which the corporation will have time to work out its difficulties.

The receiver thus appointed is an officer of the court which appoints him

[1] Adapted from a thesis by H. G. Anderson, a student in the Harvard Graduate School of Business Administration, Harvard University, in the course "A Seminar in Law," May, 1926.

[2] The use of the word "friendly" is not intended to imply anything in the nature of collusion, but that the creditor and the court are willing to work with the corporation in an effort permanently to solve its difficulties.

and, subject to statutory provisions, derives his authority entirely from this fact by means of his order of appointment and the subsequent instructions of the court. His extraordinary powers and privileges and also the limitations of his authority both spring from this relation, and this fact must be kept constantly in mind in considering those things which the receiver can and cannot do. A great body of precedent has been established through court decisions, which covers in detail most of the receiver's business activities; as a result, the receiver's situation with respect to the court must always be considered in the light of existing decisions. To offset this prescribed action, it is frequently found that there is a considerable degree of variance among these decisions. Furthermore, there seems to be a tendency away from the strict interpretation of this relationship, that the receiver is the mere custodian of property, and toward a recognition of the necessity for greater freedom of action and initiative on the part of the receiver if the property is to be maintained and operated for its actual best interests. This tendency appears particularly strong in cases where the court feels entire confidence in the business judgment of the receiver.

Extraordinary Advantages Possessed by the Receiver Which Are Not Enjoyed by the Ordinary Manager

The corporate receiver as the manager of the business for the court has in general the same rights and powers as the ordinary business manager. In addition, however, he has certain extraordinary business advantages in the form of rights, privileges, powers, and immunities that he enjoys by virtue of his position as an officer of the court, advantages which are of immense help in nearly all cases to the business struggling to get back on its feet.

Chief among the extraordinary advantages are the following:

1. Preclusion of legal action against the property by any single creditor or group of creditors to the disadvantage of all parties in interest;
2. Immunity from the requirement of specific performance of undesirable or unprofitable contracts;
3. Elimination of creditors whose proof of claim is inadequate to convince the court of its justice against the evidence of the receiver;
4. The power of the court to deal with interference with the carrying out of the receiver's function as contempt of court;
5. Advantage in the raising of funds for the carrying on of the business.

Preclusion of Legal Action Without Consent

The first of these advantages provides the means for sheltering the corporation from attacks brought on by self-interested creditors, which would hurt the weakened financial structure. Since the receiver is an officer of the court in whose custody the corporation is placed, independent legal action can be undertaken only with the court's permission, and the rights of all creditors must be worked out through the receivership. Thus, no sudden embarrassment can be caused by the impatience of any creditor, and, since it is not possible for any creditor to establish for himself a lien[3] upon the property which

[3] Power to create a lien against the property lapses if by it an actual lien has not been established at the date upon which the receivership becomes operative. This date is set by the court, and varies among different commonwealths. The situation affords an example of the diversity of receivership laws, and of the necessity for the receiver, lawyers, or business man to acquaint himself with the local legal atmosphere in which he must carry out his job.

did not exist at the date upon which the receivership became effective, ultimate fair treatment of all creditors is assured.

Immunity from the Requirement of Specific Performance of Contracts; Doubtful Claims, and Interference

A weak company may be placed in an exceedingly difficult financial position because it is bound by unprofitable or undesirable contracts. A business under an ordinary manager is not only liable for damages suffered because of the breaking of a contract, but (in appropriate cases) for specific performance. The receiver cannot avoid claims for damages for the contract which he repudiates, but in practice such claims are of little importance because the wrecked business has little or nothing with which to pay. As far as specific performance of the contract is concerned, however, the court generally holds the receiver immune. As a result, this immunity practically means the freeing of the business from the embarrassing and harmful results of unprofitable contracts.

A third advantage arises from the fact that under receivership all claims against the corporation must be established in the court of receivership by its approval, either through the schedule of liabilities which the receiver files when he takes up his duties or through special hearings which are held by the court to pass upon such claims The receiver is frequently an officer of the old corporation. At any rate, in general practice the sympathies of the receiver lie in the direction of fair dealings with all creditors, and the court has confidence in the receiver. Such a situation is highly unfavorable to a creditor with a questionable claim, and he is likely to drop it when he recognizes that his chance for allowance is slight.

The power to deal with interference as contempt arises directly from the receiver's position as an officer of the court, and interference with the receiver can be dealt with by the court as contempt. In the getting into his custody of property covered by his order of appointment, in his dealings during the receivership, and in the handling of labor difficulties, the moral effect of this power, as well as the directness and the simplicity of its ultimate enforcement, goes far toward smoothing the receiver's way. One exception to this is noted in that employees have the right to organize, and cannot be compelled to remain in the receiver's service; it is considered contempt, however, to incite employees to leave the service of a receiver so as to interfere with his conduct of the business, or to interfere with employees who remain in his service.

Advantages in the Raising of Funds for the Carrying on of the Business[4]

Usually the business in receivership is somewhat short of funds, and its general credit is somewhat strained. The receiver, however, must have funds if he is to continue the business. In that case the receiver has the advantage by reason of the fact that ordinary debts incurred by him have the priority of court costs, so that he is able to get a line of credit which no ordinary manager could expect in the same business. For extraordinary funds he may get the authority of the court to issue short-time notes or re-

[4] There are certain disadvantages which will be taken up in the latter part of the article.

ceiver's certificates, with such priorities as the court deems equitable to all concerned.[5]

Disadvantages of the Receiver Beyond Those of the Ordinary Manager

There are, however, a number of legal disadvantages to the receiver's authority which, like the extraordinary advantages, arise through the relationship of the receiver with the court and, in most cases, are likely to impede the smooth carrying out of the business functions of the corporation.

These disadvantages fall into three groups, the last of which is somewhat inclusive:

1. Limitation of the receiver's authority to the jurisdiction of the court which appoints him;
2. Limitation of his authority to the duration of the receivership;
3. Limitation of his authority to actions sanctioned by the court.

Limitation as to Jurisdiction

Since the receiver is the court's custodian of property, and since the jurisdiction of the court cannot extend beyond the limits of its own district, the receiver has no official status and hence no authority outside of that district. When a receiver needs control of property outside the jurisdiction of the court which appointed him, it is necessary to create subordinate receiverships in other jurisdictions. Ordinarily this is accomplished by prearranged filing of suit and application for receivership in each of the other districts at exactly the same time that suit is filed in the main jurisdiction, and request is made for the appointment of the same man as receiver in each court. This arrangement may prove unsatisfactory, since the receiver now gets authority as to his functions from several courts of different degrees of enlightenment. He will be in the unsatisfactory position of being responsible to several masters, and the extent to which he may use his business judgment and discretion without overstepping what the courts conceive to be the proper bounds of his authority, is likely to vary considerably.[6] Thus it is essential that the receiver know the laws and court attitude under which he must work.

Limitation of Time

The second limitation comes from the fact that the court's authority cannot extend in point of time beyond the termination of the receivership. The duration of receivership is unknown. The receiver, therefore, cannot bind the corporation with contracts which will outlast the receivership. Further, if a receiver dies or is removed from office, his successor is not bound by contracts which were made by the first receiver

[5] Since the value of the property may be expected to decline greatly if the property is not operated and since funds are required for operation, expediency sometimes forces bondholders to set the priority of receiver's certificates ahead of their own lien; the money must be raised, and on account of the credit situation nothing but a first lien can be sold. Because of the quasi-public character of railroad receiverships, precedent gives courts the power to set up this priority in railroad cases without the consent of holders of prior liens.

[6] This is particularly true if the receiverships are granted by state courts rather than by federal courts, since the former differ very widely in their attitude toward the business function of the receivership. In addition, state courts are subject to state laws, which also vary widely. Generally, the federal courts are much more progressive in handling receiverships and are used for receivership actions whenever possible. In employing federal courts, the ordinary requirement met under the law of federal jurisdictions is the existence of a claim over $3,000 by a person living in a different state.

unless the latter confirms them when he takes up his office. The uncertainty of the status of contracts causes reluctance in regard to entering into them on the part of those with whom the receiver is dealing, and places at a disadvantage the receiver who is attempting to operate the business. A further bad effect will probably be a weakening in the morale of the organization, since the employees will not work hard to secure the approval of an employer whose direction of the business is limited to a relatively short period.

Requirement of Court Sanction

Perhaps the most serious obstacles to the receiver's freedom of action are those attributable to the legal situation that as an officer of the court all the receiver's authority must originate with the court, either by the order of appointment or by specific written instructions. This rule, if strictly interpreted so as to require written authority from the court for any business operation performed, if not given previously by specific authority, would hurt the conduct of the business considerably, both through the unfamiliarity of the court with the affairs and requirements of the business and the endless delay and red tape which would be involved. Furthermore, the publicity involved in the procedure would keep competitors informed as to what the company was doing and would nullify many advantages that the receiver might have, such as the knowledge of an advantageous purchase of raw materials. The extent of departure from this strict interpretation depends greatly upon the degree of enlightenment of the court from which the receiver gets his authority. In the courts where receiverships have been frequent, a body of precedents has grown up which tends to satisfy the requirements of a modern business situation.

Order of Appointment; Authority to Operate

Since the receiver is bound strictly by the order of appointment, this order should be drawn for the court's signature in the broadest possible terms and with all possible foresight into situations which may arise. It is not considered the court's function to operate a business which may be temporarily in its custody, but it has the power to do so if by this action the property will be preserved to better advantage. The receiver, therefore, cannot operate the business without specific court authority, which is given only if the court deems such operation advantageous to the property.

That the court merely orders the completion of the work in process, in order to realize upon it, does not imply authority for new transactions. The interpretation in this situation, however, of the exact line of demarcation between old authorized and new unauthorized work may be a very delicate operation for both the receiver and those with whom he is dealing, since receivers' contracts are binding only when authorized or approved by the court. Even if the court anticipates that the business will be run at a loss, it may sanction its continuance to avoid a larger loss. In such an event, it behooves the receiver, in order to protect himself from personal liability, to secure permission from the court to proceed, because operation at a loss would seem to dissipate the property.

It is obviously almost impossible for the receiver as a business man to secure

previous permission for all his actions, nor would it be wise to annoy the court continually with details. The receiver is required, therefore, to use a very nice discretion in all of his actions. Most careful judgment is required in the matter of expenditures. The typical order requires him to "hold, preserve, maintain, manage, and operate the property." Just what expenses would be covered by the order? It is obviously a matter of good business judgment to decide. Expenses incident to the administration of the property, such as wages, taxes, and ordinary small repairs, should be clearly allowable. Expenditures for expansion or for extensive new equipment clearly are not allowable, except under unusual circumstances and with the express permission of the court. The difficulty of interpretation lies in regard to expenditures which come between the above two classes; the final result is likely to be a compromise, depending in large measure upon individual circumstances, the attitude of the court, and its confidence in the receiver. Recommendations of persons interested, and particularly of the receiver, are likely to carry considerable weight with the court as to what expenditures should properly be made.

Raising Funds

Closely related to the matter of expenditures of the receiver is that of the raising of funds. The receiver, even though he has the important power of raising funds, can neither borrow on nor sell his assets without specific court authority, and the strict rule, which seems to be followed closely, is that in seeking funds from this authority he must specify the exact purpose for which the money is to be used. The extent to which the receiver can obtain court authorization for the borrowing of funds again depends upon how broadly the court determines the operation of the business. In some cases the court may limit its permission narrowly to the borrowing of funds that will just preserve the business intact, while in other cases permission may be given to raise funds in order to get increased efficiency in the business.

Disputed Claims

The receiver labors under a further handicap in that he is not permitted without specific court authority to compromise disputed claims or to accept any settlements due the corporation at less than face value.[7] Under a strict interpretation, this restriction would seriously handicap the receiver in his efforts to operate the business, since without court authority he would not be able to adjust the frequent differences, such as replacements and discounts, that arise betwen a corporation and its sources of supply or customers. In actual practice, the receiver must, of course, make such adjustments in order to hold the good-will of the other party, and subsequently obtain the court's approval. The receiver must be careful, however, to keep himself within the limits of action which he is certain will be approved.

Accounting

The receiver must also meet the requirements of the law in regard to accounting which apply to his position.

[7] Either of these acts would be in violation of the legal rule that the receiver cannot waive the rights of the creditors of the corporation without specific court order, since in the one case actual claims are waived while in the other the assets that the creditors may attach are diminished.

Upon taking up his duties, he must file with the court a complete inventory of the property in his care, an appraisement of it, and a statement of its liabilities. In the operation of the business he must keep his accounts in such form that they will show in detail his revenues and expenses, with the court's sanction and supporting vouchers for the latter.[8] He must also make periodic reports to the court regarding the status of the business and the results of operation, and his books are always open to the inspection of all persons interested in the receivership.

Agency

In addition to the restrictions that have been mentioned, the receiver is bound by the general laws of agency, which theoretically apply with equal force to the ordinary business manager, but which in practice must be observed more closely by the receiver. On account of his connection with the court, on account of his representative position, and on account of the fact that trouble for him can easily be made through an inspection of his books by an interested trouble-maker, it is necessary for him to keep his conduct well within the letter of the law. He cannot, for example, have any interest in the business which will prevent him from carrying out his duties in the interest of the trust; he cannot employ counsel with inconsistent affiliations; he cannot receive any other fee than the receiver's fee; he cannot deal with the corporation of which he is the receiver; he cannot make for himself a profit out of his position.

[8] The receiver must require invoices at least in duplicate, one copy for his report to the court and, one for the corporation files. Prudence suggests that, in addition, he should require a third copy for his own files and protection.

Summary

The receiver of an industrial corporation is essentially a business manager appointed by a court of equity to take charge of and preserve the property of the corporation for the benefit of all parties in interest, pending settlement of the suit out of which the receivership has sprung. In general, the powers and the limitations of the receiver as manager of a going business are those which any other manager of the business would possess. From the receiver's peculiar relation with the court, he both gains advantages and suffers disadvantages which the manager under ordinary circumstances would not. He is sheltered from the attacks of unfriendly creditors, he can abrogate unprofitable contracts, he is freed from the worry of creditors with doubtful claims, and any interference with his function can be taken into court as contempt. On the other hand, his authority is limited to the jurisdiction of the court which appoints him, to the function of receivership, and to the actions which have been authorized by court or which are certain to receive the court's subsequent approval.

Conclusions

The extraordinary advantages which are enjoyed by a corporation in equity receivership, coupled with the freedom in its use which has gradually been established during the past fifty years, render the receivership a most valuable piece of legal machinery for the temporary assistance of the business which finds itself on the verge of financial trouble. In carrying out the functions of receivership, there must exist a close relationship between and overlapping of the legal and business professions. The

business man who finds himself appointed receiver must understand the legal pitfalls which confront him, and the lawyer who finds himself appointed receiver must understand the business functions he has to carry out, if they are to utilize the form for the best results to the corporation without embarrassment to themselves. It is most advisable for the business man to have legal knowledge or sound legal advice and for the lawyer to have business knowledge or sound business advice in all matters pertaining to the receivership.

The close relation and the overlapping of the arts of law and business, which are found not only in receivership but also in a large number of situations which arise in the field of corporation law, would suggest the need of a profession whose members are trained soundly in both law and business to take care of the art of correlating the two.

Where the receiver's power is specifically set forth or definitely limited by law, or where his action is covered by previous court orders, his course is reasonably clear. But where he is confronted with the need for immediate action and his course has not been defined, or when the matter itself is too trivial to warrant his annoying the court, he must use careful discretion so that he will both secure the court's approval and accomplish the desired end. If he has the confidence of the court so that he does not have to bother it unduly and yet does not undertake too large or too unusual steps without authority, and in general conducts himself with proper regard for his position and with sound judgment for the benefit of the property, his administration is likely to continue satisfactorily.

REVIEWS OF BUSINESS LITERATURE

SOME RECENT BOOKS ON RETAILING

By M. P. McNAIR

WRITING in the *Harvard Business Review* for January, 1923, on the "Profession of Business," President Lowell said: "In fact, it would not be very rash to suggest that a basis of principles capable of being philosophically ascertained and academically taught is essential to a true profession." In forewords and prefaces to current business books, the acceptance of this view of the professional character of business is becoming more and more common. To quote from the preface of a recent book by Brisco and Wingate in the Retailing Series[1] published for the New York University School of Retailing:

> Buying merchandise to sell at retail is one of the oldest of the arts but the newest of the sciences. Formerly, it was thought that if one had neither the time, the wit, nor the opportunity to master a profession, he could always turn to the field of business and make a living through buying and selling commodities. In late years, however, the demands of the government for an accurate accounting of store operations and the supremacy in competition evidenced by those who do keep adequate records have brought retailers to realize that theirs is an occupation demanding the skilled training of the profession.
>
> The aim of this book is to present not only the ethical standards of buying, but also the scientific principles underlying what, when, and how much to buy, in order successfully to perform the buying function in retailing.

The three books thus far published in this retailing series all deal exclusively or primarily with department stores. In this respect their scope is somewhat narrower than indicated by the titles. On the other hand, with respect to the various aspects and functions of department store management, the scope of these books is somewhat broader than the titles convey.

The most useful of these books is the volume on *Retail Receiving Practice*, by Brisco and Wingate. The fact that a concise and clearly presented volume of more than three hundred pages can be written on the methods of receiving goods in department stores testifies to the degree to which specialization of tasks has been carried in the department store form of organization. It is the aim of this book to describe completely the procedure in handling merchandise from the time the order is placed until the goods are put in forward stock for sale to customers. The functions involved are those of traffic management, receiving, checking, marking, control of reserve stock, distribution to departments, and invoice handling. The book deals also with the related topics of returns and claims, as well as with the personnel and statistical control problems arising in this division of department store operations.

This treatise is based on a first-hand study of receiving and marking pro-

[1] Brisco, Norris A., and Wingate, John W. *Retail Receiving Practice*. Prentice-Hall, Inc., New York, 1925. xiii, 354 pp.

Brisco, Norris A., and Wingate, John W. *Retail Buying*. Prentice-Hall, Inc., New York, 1925. xiv, 396 pp.

Fri, James L. *Retail Merchandising, Planning, and Control*. Prentice-Hall, Inc., 1925. xiv, 371 pp.

cedure in a considerable number of department stores both in New York City and in other cities, including Boston, Minneapolis, and Seattle. It is therefore distinctly a manual of practice, with emphasis on the description of procedure. The general plan of the book is to describe alternative methods and to give the advantages and disadvantages of each, with an indication of the authors' opinion as to which method is preferable.

For instance, in the matter of checking the merchandise after it is received, the merits of the direct check of the invoice with the merchandise are compared with the advantages of the indirect or blind check whereby the merchandise received is listed on a tally sheet and the check made between the tally sheet and the invoice rather than directly between the invoice and the merchandise. Similarly, as regards the process of marking the merchandise with the retail price, the advantages and disadvantages are presented for each of the following methods of procedure: (1) retailing goods from original invoice, (2) retailing samples, (3) retailing goods from copy of invoice.

Each chapter is followed by a brief bibliography and a number of problems designed to test the student's knowledge of the subject-matter of the particular chapter. In this book the problems are for the most part simply questions, such as the following:

> Why is the problem of invoice control especially difficult in the receiving department?
>
> When are errors most likely to occur in checking invoices against receiving records?

The authors of *Retail Receiving Practice* favor in general the complete centralization of the functions of receiving, marking, and reserve stock handling. Many store executives will dissent, however, from the authors' conclusion that these functions belong under the controller's division in the store organization chart rather than under the store manager's division. There will also be differences of opinion as to whether the handling of reserve stock should be closely associated with receiving and marking, or whether this is a merchandise function, the control of which might more properly be decentralized.

As a descriptive manual of department store procedure, *Retail Receiving Practice* is a distinctly useful book. It is well organized, its presentation is clear and fairly concise, and the material is well oriented with respect to the various other functions of department store management.

Retail Buying, also by Brisco and Wingate, is ostensibly a book of the same general type as *Retail Receiving Practice.* The subject treated, however, is considerably broader; and the treatment is not so detailed, and apparently not based so directly on first-hand study of current practice. At the outset, the authors make an attempt to present some rudimentary economic considerations and to develop an historical point of view, but what one hopes will prove the keynote of the book is sounded on page 6:

> Ascertaining what to purchase, not from the whims and the wishes of the buyer, but from an understanding of what the customer really wants is the new trend. The customer-demand side has assumed an important rôle in successful buying. This has been stated effectively in the words of a buyer: "Buying must be gauged from the customer-demand angle and not from that of the buyer's wishes and whims." The study of customer-demand should be given more attention. It is the duty of the management to give every possible assistance to the buyer in this work. The time is not far distant when, in large stores, experts will devote their entire time to studying the needs and the wants of the customer.

It must be stated, however, that this important concept is not carried out in the structure of the book as fully as could be desired.

The scope of *Retail Buying* is somewhat broader than the title indicates; in fact, the book might fairly have been entitled "Department Store Merchandising." Topics considered include the organization of the merchandise division of a department store, resident buying and the merchandise fair, detailed buying procedure, ethical standards between buyers and vendors, receiving and marking, invoice procedure and control, mark-up, mark-downs, inventory methods, stock control, sales promotion, and layout. The sections on receiving and marking and invoice procedure present a condensation of the material in the authors' other book in this series, *Retail Receiving Practice.*

It does not require any stretch of the imagination to see that mark-up, inventory methods, and stock control are closely related to buying. The same is also true of sales promotion, if we interpret "buying" as including the whole merchandising process in a department store. There seems less justification, however, for including a chapter on layout. For students, and perhaps also for some junior executives in department stores, the chapter on mark-up should prove especially useful, particularly for its discussion of the mathematics of mark-up, involving the relation of the percentages of gross margin and mark-downs on net sales to the percentage of mark-up on the original retail price. These occasionally troublesome points are clearly illustrated and explained. For description of procedure, the chapter on stock control is also valuable.

Among points that might be criticised are the confusion of trade and quantity discounts (pp. 131-133) and the assumption (p. 65) that the National Merchandise Fair held under the auspices of the National Retail Dry Goods Association in 1922, 1923, and 1925, was based on sound economic principles. The major fault which the present reviewer has to find with this book, however, lies in its failure to emphasize sufficiently the importance of that close coordination of sales, stocks, and purchases which is the essence of modern controlled merchandising. Such emphasis would have been primarily a matter of organization, since most of the necessary material is present. In any event, a more detailed and better coordinated account might have been given of the processes of planning sales, stocks, and purchases; of adjusting plans in the light of current performance; of exercising control both on a dollar basis and on a unit basis; and of computing purchase limits.

The problems at the close of the chapters in this book include fewer straight questions and more cases—although the latter appear to be mostly of the "armchair" variety. In spite of some defects, *Retail Buying* is a worthwhile book for students to use either for reference purposes or for obtaining needed background.

The third book in the New York University Series, *Retail Merchandising, Planning and Control,* by James L. Fri, is the least useful of the three, either for students or for business men. Professor Fri defines his subject as follows:

> "Retail Merchandising" is the term applied to the activities of the merchant in bringing about the most advantageous proportion between sales, stocks, and profits. It includes not only the buying of goods, but the active solicitation of the patronage of customers through aggressive promotion of sales.

This book appears to be designed as a general retailing text for an elementary class. Topics covered are as follows: types of retail stores, organization, expenses and profits, classification and distribution of expenses, the retail method of inventory, stock-turn, physical inventory and slow-selling stock and the merchandise budget, control through department subdivision, the sales force, advertising, merchandising policies, and current merchandising statistics. On the retail method of inventory, stock-turn, physical inventory, the merchandise budget, and advertising, Professor Fri covers much the same ground as is covered by his colleagues Professors Brisco and Wingate in their book, *Retail Buying,* Throughout his book, Professor Fri has drawn heavily on the bulletins of the Harvard Bureau of Business Research, on the publications of the National Retail Dry Goods Association, and on Professor David's *Retail Store Management Problems.* This is especially true of the chapters on expenses and profits, classification and distribution of expense, and stock-turn. In some instances Professor Fri has failed to give adequate credit to his sources.

In his discussion of the retail method of inventory Professor Fri is in error in assuming, as he does on page 113, that on a rising market this method results in overstating the inventory when a store is taking mark-ups. According to the formula for the retail method of inventory recommended by the Controllers' Congress of the National Retail Dry Goods Association and approved by the federal tax authorities, subsequent or additional mark-ups operate to increase the mark-up percentage, and consequently to decrease its complement, the cost percentage, with the result that the cost value of the inventory under such conditions is not overstated.

The best chapters in Professor Fri's book are those on the merchandise budget and merchandise policies. Also, the cases and problems given at the end of each chapter are somewhat more comprehensive and realistic than those in the other two volumes of this series.

In the foreword written by Dr. Brisco for *Retail Merchandising, Planning and Control,* the following statement appears:

> *Retail Merchandising, Planning, and Control* has a definite threefold purpose. First, to present the principles underlying retail merchandising, planning, and control; second, to present actual problems embodying the principles; and third, to meet pedagogical requirements by combining text and case methods of presenting the subject.

A substantially similar statement appears in the foreword for each of the other two books in the series. The success of these books in fulfilling the third stated purpose can best be gauged by those who have used them in the classroom. Measured by current standards for problem and case books, none of these volumes successfully fulfills the second stated purpose. The volume on *Retail Receiving Practice* and a considerable part of the volume on *Retail Buying* have value as descriptive manuals of procedure; but it cannot be said that even the best of these, *Retail Receiving Practice,* is successful in accomplishing the first stated purpose, namely, the presentation of fundamental principles.

Quite different in character from the New York University Retailing Series is Mr. Paul Mazur's recent book on department store organization.[2] This book also deals exclusively with the

[2] Mazur, Paul M. *Principles of Organization Applied to Modern Retailing.* Harper and Brothers, New York, 1927. xiv, 331 pp.

department store field; it is based on data collected from thirteen department stores by three men working under the direction of Professor Donald K. David, of the Harvard Graduate School of Business Administration. Mr. Mazur, with the assistance of one of the three field investigators, Mr. Myron S. Silbert, studied the results of the field survey and drew the conclusions presented in this book. It should be noted that the material gathered in this field survey, a summary of which is presented in Part IV of Mr. Mazur's book, was not merely a compilation of organization charts; it was rather a detailed analysis of each operating step in the retail process, of the organization units responsible for these steps, and of the lines of organization authority. The book aims definitely to be a discussion of department store organization principles, and this aim is in part achieved. It is not a manual of practice or a rehash of the opinions of others.

When Mr. Mazur's volume appeared from the press, the newspapers seized on the phrase "America is not going to be Fordized," which appears on page 2. Although one may agree with Mr. Mazur's statement on page 3 that "all manufacturers can learn a great deal from the progressive retailer concerning the anticipation of sales possibilities and the planning and control of inventories," it is difficult to see what bearing Mr. Mazur's book has on the question whether American industry is going to be Fordized or not.

Mr. Mazur has followed the general theory that it is a sound procedure for a store to develop first of all a plan of organization which is correct in principle, and then to accommodate that plan to the available personnel. Incidentally, some accommodation may also be necessary to the type of store. Mr. Mazur's theoretically sound plan of department store organization visualizes under the general management four coordinated functional divisions, namely, Merchandise, Publicity, Store Management, and Control, these divisions to be headed respectively by the General Merchandise Manager, the Publicity Manager, the Store Manager, and the Controller.

In the pyramid headed by the General Merchandise Manager are included the main store and basement merchandise managers, the outside buying offices, the divisional merchandise managers and buyers, and finally the stock people and sales people. Under the Publicity Division, according to Mr. Mazur's plan, are included advertising, display, and the merchandise comparison office. The third main division, Store Management, is to include personnel, customer service, store operation (receiving, marking, delivery, and so forth), maintenance, supply purchasing, and protection. The fourth and last division, headed by the Controller, is to include all the recording and control functions, such as statistics, accounting, and auditing; and credit and collection, handling of cash, insurance, taxes, and general office routine.

Each of these four functions, the author concludes, represents a distinct point of view the maintenance of which is necessary to the successful management of a department store. At the same time, he correctly points out that all these four functions are closely interrelated in principle and inevitably interwoven in actual operation. In this respect, department store organization differs from many other types of business organization. The author considers these necessary interrelations a source of strength rather than of weak-

ness; and a necessary corollary of the interrelation of these functions, he believes, is a system of checks and balances constructed somewhat on the same principle as the checks and balances provided for in the Constitution of the United States.

Part I of Mr. Mazur's book develops his conception of the proper allocation of tasks among the four main divisions of a department store organization. This section includes chapters on the logic of department store organization, the functions of general management, the merchandising division, the publicity division, the store management division, the control division, and also a chapter on the problem of expense control. It is this section of the book which carries the main burden of Mr. Mazur's argument, and this is the section which will give rise to the most controversy. Part II deals with the details of organization and operation necessary to make effective the general plan developed in Part I. Part III consists of hypothetical cases to illustrate the methods by which the organization as developed in Parts I and II would handle particular problems. Part IV describes the methods used in the field survey and presents a summary of the data obtained from that survey.

Mr. Mazur's theories occasioned a spirited discussion at the annual convention of the National Retail Dry Goods Association in New York early in February of this year. No unanimity of opinion was apparent in this discussion; no one department store executive accepted or rejected Mr. Mazur's plan *in toto,* and each tended to select different points for commendation or disapproval. In general, however, the discussion of Mr. Mazur's book at this meeting and elsewhere has centered for the most part around the following three controversial questions:

1. Should sales people be directly under the control of the buyer as an integral part of the merchandise division, or should they be under the control of floor men and section managers responsible to the store management division? Mr. Mazur argues for the first point of view. Many department store executives prefer the other alternative.

2. Should the merchandise comparison office be responsible to the publicity division or to the merchandise division? On the theory of checks and balances, Mr. Mazur advocates the former position; current practice, however, apparently leans to the latter plan.

3. Should the function of expense control be a part of the controller's job, or should it belong to the store management division, where the money for the most part actually is spent? Again on the theory of checks and balances, Mr. Mazur would give this function to the controller, but the more common practice is to place the control where the responsibility is, namely, under the store management division.

In many respects, the first of these problems is the most interesting and significant at the present time. Possibly it might be urged that in advocating a plan of making sales people responsible directly to department buyers rather than to section managers and floor superintendents, Mr. Mazur has departed from his theory of checks and balances; but he would reply that the section managers and floor superintendents can maintain a better check on selling service if the sales people are not responsible to them.

This argument, of course, is part and parcel of the broad, general question whether the functions of buying and selling can be effectively separated in a department store. In some stores there is a tendency to work toward a plan of organization under which the merchandise division will be concerned solely with the purchasing of merchandise and under which a division of sales

promotion, headed by a general sales manager, will be responsible for the actual selling of the merchandise and for all forms of sales promotion and advertising. Since this separation of buying and selling is characteristic of chain store organization, this problem has a direct bearing on the possibility of the effective consolidation of department stores into chains. On this issue Mr. Mazur's position is as follows:

> So long as retailers believe that there is an integral relationship between buying and selling, the buying staff and the sales force, for reciprocal advantages, must remain closely associated. When buying and selling can be effectively disassociated in most of the departments of a store, the day of huge and complete consolidation is at hand. Consolidation may come long before this disassociation is a fact; but when disassociation is a fact, consolidation will be here. In the meantime, the burden of proof is upon the functional division of the buyer and the seller.[3]
>
> The best chance for the successful use of consolidated buying lies in giving the joint responsibility for buying and selling to one organization division. Then as the central office develops skill and confidence, the buyer being a seller will have an important function left, or if not, then the assistant buyer, who today acts as a selling assistant responsible in large measure for selling what he or she does not buy, will be ready to be trained to sell what he does not buy. So has the sales force. The same development is possible for the department manager. As a matter of fact, it is worked out in those chain units which handle completely staple merchandise and those which carry staple and nonstaple items.
>
> Where the buyer is only a buyer and not a seller, in theory at least, the attempt to centralize some of the buying function into consolidated activity is recognized as a challenge to his prerogatives. Condemnation and resistance replace confidence and enthusiasm in the sale of the group purchases. The solution of this problem is a matter of education and the solution is so essential for economy of retailing that it will be one of the chief responsibilities of the general manager of the present and the next generation.
>
> There is no valid reason why the associated group—or, rather, the consolidated group—of ten stores should have ten book and stationery buyers or ten toilet goods buyers. The job of buying can be centralized.[4]

It seems that the author has scarcely done justice to this important question. For instance, some consideration of the present trend in group buying methods might have been introduced effectively in this connection. So far, apparently, for groups or combinations of department stores, so-called "group buying" rather than "consolidated buying" has been found most effective; and in group buying there appears to be little tendency at present to dispense with individual buyers for each department in each store in the group.[5]

Many casual readers of Mr. Mazur's book no doubt will be surprised at the complexity of modern department store organization. To them, perhaps, will occur a question whether there is not a real danger of developing an unwieldy and top-heavy structure that eventually may be handicapped in competition with smaller units. It is true that the proportionate number of nonselling employees of a department store tends steadily to rise with increasing sales volume. Data gathered by the Harvard Bureau of Business Research from several hundred department stores for the year 1925 showed[6] the ratios of selling and nonselling employees to total employees by size of stores to be as shown in the table on the following page.

These figures tend to corroborate other studies which have indicated that

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[3] *Loc. cit.*, p. 76.

[4] *Ibid.*, p. 94.

[5] See the case of the Hatch Company, *Harvard Business Reports*, Vol. 2, p. 277.

[6] Bulletin No. 57, *Operating Expenses in Department Stores in 1925*, Bureau of Business Research, Harvard University, pp. 81 and 26.

Net Sales	Selling Employees (% of Total)	Nonselling Employees (% of Total)
Less than $250,000	76%	24%
$250,000-$499,000	72	28
$500,000-$999,000	69	31
$1,000,000-$3,999,000	57	43
$4,000,000-$9,999,000	47	53
$10,000,000 and over	42	58

the proportion of nonselling employees in large department stores is roughly 60 to 40. It is from these large stores that most of Mr. Mazur's data are drawn and to which his conclusions principally apply. There are available, also, however, figures indicating that the effectiveness of larger stores has not suffered by reason of their more elaborate organization. The following table, based on figures collected by the Harvard Bureau of Business Research for 1925, shows sales per employee for stores grouped according to volume of sales:[7]

Net Sales	Average Annual Sales per Employee
Less than $250,000	$8,500
$250,000-$499,000	7,700
$500,000-$999,000	7,600
$1,000,000-$3,999,000	7,000
$4,000,000-$9,999,000	7,600
$10,000,000 and over	8,800

These figures, be it noted, are for sales per employee and not sales per salesman. They were arrived at by dividing the total volume of sales for each store by its average total number of employees, including both selling and nonselling employees. These figures seem to indicate that both the very small and the fairly large stores are using their organizations more effectively than the medium-sized stores. At any rate, there is no indication that the relatively large proportion of nonselling employees in large department stores has operated to reduce the efficiency of those organizations.

Yet if one wipes the slate clean of all preconceived notions and familiar impressions of current practice, and approaches the problem of department store organization with an entirely open mind, would it not be logical to set up only three main divisions, namely: (1) merchandising, including buying, selling, service, sales promotion, and publicity; (2) store operation and maintenance; and (3) control? Mr. Mazur, of course, immediately would object that Publicity and Service need to be set up as coordinate separate divisions, in order to exercise a check on Merchandise. The advertising manager, he would say, must not be in a position where he is forced to advertise whatever the buyers have bought, but, on the other hand, should be in a position where he can refuse to advertise merchandise which he does not believe represents the store properly to the public. If there is a genuine need for all these checks and balances, as Mr. Mazur assumes, and as current practice seems to indicate, is not this fact in itself a severe criticism of the prevailing theory and practice of merchandising in department stores? Would not a change in point of view perhaps be more beneficial than further elaboration of an already complicated type of organization? These speculations indicate some of the lines of thought suggested by Mr. Mazur's book.

It is unfortunate that this book is not better written. The uninteresting style and loose organization will repel rather than attract students. No index is provided; there is much burdensome

[7] *Ibid.*, pp. 82 and 27.

repetition; and the presentation is frequently prolix, while at the same time suffering from lack of illustrative material. One feels also that Mr. Mazur is too dogmatic; his conclusions are not sufficiently seasoned. The book would have profited greatly if the author had been in a position not only to draw more on his own experience for instances and illustrations, but also to turn the conclusions over in his mind for a greater length of time before putting them down in final form. One cannot help feeling that Mr. Mazur was at some disadvantage in attempting to breathe life into the cold data of a survey which was mainly the work of others.

In conclusion, it must in all justice be said that none of the four books under review fully exemplifies the spirit of President Lowell's statement of the essential basis of a true profession. As regards the real implications of the phrase, "principles capable of being philosophically ascertained and academically taught," most books in the field of retailing, as well as in other domains of so-called business literature, still represent faith without works.

BOOK NOTICES

Arnold, John R. HIDES AND SKINS. *Chicago: A. W. Shaw Company, 1925. 606 pp. $6.*

This book, the first to be published in English concerning the international trade in hides and skins, has been written by an authority. Books previously published on the subject have given a national point of view; this fact has been a distinct handicap to those desiring information of an international character.

Hides and Skins deals with the world sources of the various hides, the economic factors of the trade, the local customs and characteristics, the physical handling of the skins, the credit and price structure, and the world trade organization that has been built up to handle this business.

The information is comprehensive, and the book is clearly and interestingly written.

Barnett, George E. MACHINERY AND LABOR. *Cambridge: Harvard University Press, 1926. 161 pp. $2.*

The effect of the introduction of machinery on the general rate of wages and on unemployment has been much discussed. Professor Barnett has added to these discussions a genuine contribution to a better understanding of another phase of the machinery problem—the displacement of skill and its effect upon the skilled workers in the trades directly affected. A study is made of the facts relating to the introduction of four machines: the linotype, the stone-planer, the semi-automatic bottle machine, and the automatic bottle machine. In each case there is an estimate of the potential and actual displacement of workers from the trade, a description of the policy of the trade union concerned, and a summary of the effects on the wages and other conditions of employment of the hand-workers left in the trade. Then the facts are brought into relation with the current theories concerning (1) the mechanical and economic factors governing the amount of displacement, and (2) the proper policy for a trade union to pursue when the skill of its members is threatened with displacement.

In suggesting the policy, generalizations are avoided in favor of a discussion of the policy followed in the case of each of the four machines and the results obtained. It does not seem that the differences in the amounts of displacement from the trades affected vary with trade-union policy, but rather with the mechanical and economic factors centering around the introduction of the particular machines. Hence no universal policy is formulated, but the book does contain useful suggestions for the formation of a policy in any given case.

Benner, Claude L. THE FEDERAL INTERMEDIATE CREDIT SYSTEM. *New York: The Macmillan Company, 1926. 375 pp. $2.50.*

In this book the author considers thoroughly the credit facilities made available by the passage of the Agricultural Credits Act of 1923. Although full knowledge of both the banking system of the United States and the financial requirements of agriculture is evident in his treatment, the subject is not approached either from the viewpoint of the banker or from that of the agriculturist. The book is an analytical presentation of facts, free from bias.

The author explains that agricultural credit corporations, properly administered, do not compete with commercial banks, but rather supplement them by facilitating the movement of funds for agricultural purposes from the money centers to the capital-deficit areas. The chief users of the credit made available by the Act of 1923 are cooperative marketing associations and cattle-raisers. The commercial banks may be expected to continue to meet ordinary agricultural requirements. The looseness of the construction of the Agricultural Credits Act is discussed, the conclusion being that the service to be derived from it must depend largely upon the way the Act is interpreted and administered. At the same time is outlined a sound policy which, if followed, should make the credit facilities offered by the Act a smooth-running part of the banking machinery of the United States.

This book should be of particular value to men interested in the methods of finance open to agriculture and in the solution of the farm problem as a whole.

Bruère, Henry, and Lazarus, Arthur. APPLIED BUDGETING. *Chicago: A. W. Shaw Company, 1926. 248 pp. $7.50.*

The authors' aim is to show the practical business man that budgeting is not a mysterious art, but that it is a practical and valuable aid to the clear thinking and decisive action that constitutes real control.

The book opens with a few principles underlying budget construction; then follows the application to oil companies, railroads, banks, newspaper and magazine publishers, contracting and construction companies, metal-working establishments, department stores, canning concerns, hotels, ice-cream manufacturers, and garment-makers. Attention is called to the type characteristics of the budget as applied to each business, so that the essential methods used therein may be extended to other businesses fundamentally similar. Thus, the essentials of budgeting for a construction company may be used for a printing concern, since in both there exists the basic similarity that work is done in fulfilment of customers' orders on hand. The final chapter gives in summary form the budgeting methods used and the performance comparisons obtained in a dozen specified companies.

The volume should be of interest to executives, accountants, and engineers in the particular or allied industries dealt with, and also to students of management.

Catlin, Warren B. THE LABOR PROBLEM IN THE UNITED STATES AND GREAT BRITAIN. *New York: Harper and Brothers, 1926. 659 pp. $3.50.*

Professor Catlin covers the whole range of the labor problem in order to bring together a comprehensive view of the questions involved. The book discusses the causes of discontent in present-day industrial society and seeks both their historical and their modern background to determine wherein labor's complaints and claims may be justified. It traces the developments of the different branches of the labor movement in their relationships to one another, and compares British and American conditions and methods in all significant respects. Particular attention to unionism and labor politics gives a basis for judging the value and limitations of these tools of labor and their effect upon the public. The different types of labor cooperative movements and of socialism are also presented. Through this broad discussion of its various phases, a philosophy of approach to the labor problem is worked out which is wholly impartial.

The book is so divided and organized as to serve as a useful text, and in addition is presented in a manner to make it interesting reading to the general public. All material is brought thoroughly up to date. The absolute lack of propaganda makes this book a very refreshing and useful treatise of one of the troublesome questions of modern industry.

Edie, Lionel D. ECONOMICS: PRINCIPLES AND PROBLEMS. *New York: Thomas Y. Crowell Company, 1926. 799 pp. $5.*

If Professor Edie's book should be widely distributed and read, the economic illiteracy with which the people of the United States have been charged would be quickly mitigated. The author makes effective use of established economic theory, but maintains his independence of thought. The text follows the same general outline as other introductory books on economics, but the newer tendencies and developments have been appropriately included. The more difficult phases of economic theory are not neglected, but are presented so clearly and concisely that the lay reader will have no difficulty in grasping them. The problems presented are actual economic issues of national or international concern. Adequate factual description, supplemented by pertinent statistical measurement and analysis, strengthens the presentation. A broad and significant correlation between economics and the other sciences is established throughout, and economic theory is correlated with the facts of the business world. The economic order is viewed as institutional and evolutionary, and a frank ethical concern for welfare and well-being is displayed.

Giles, Ray. BREAKING THROUGH COMPETITION. *New York: D. Appleton and Company, 1926. 179 pp. $2.*

The title *Breaking through Competition* suggests a breadth of subject-matter which no writer could adequately cover in a single small volume. Mr. Giles, a merchandising man, has approached the problems of competition entirely from the merchandising angle. His treatment of the subject is unique. He con-

stantly avoids theorizing. He states a point briefly; then, in order to emphasize this point, he draws from his own observations numerous interesting illustrations of what others have done along that particular line.

He emphasizes immediately competition in its broadest aspect; that is, the often overlooked competition between products which are entirely unrelated. He then takes up various means by which some of the sting of competition may be removed: for example, the development of new uses and new markets for a product; the development of features which would give a product individuality; the modernization of old products and of old merchandising methods; the direction of advertising and other merchandising efforts toward the most susceptible class of consumer; and the more efficient utilization of the methods of distribution.

The treatment of the subject, which is extremely sketchy, makes practically no distinction between matters of wide significance and of general importance, and those which are narrow and relatively unimportant. On the whole, considering the nature of the subject, *Breaking through Competition* presents in an interesting form the pertinent suggestions of a practical merchandising man.

Groat, George Gorham. ORGANIZED LABOR IN AMERICA. *New York: The Macmillan Company, 1926. 527 pp. $3.*

The second edition of *An Introduction to the Study of Organized Labor in America* has been revised to give a reliable interpretation of current developments.

The author rewrites the book without changing his original point of view, that the real approach to all labor problems is through a broad understanding of the organized labor movement.

The book approaches the study by way of a brief historical background which suggests the beginnings and development of the trade-union mind. The media through which this mind acts are presented in a few interesting chapters on the structure of trade unions.

The important section of the study deals with the practical means by which organized labor carries on its main function of collective bargaining. The author includes some discussion of the political problems. The final chapters indicate the transitional and future developments.

The presentation shows clear reasoning on a tangled subject. It does much to give the reader an intelligent and human understanding of the trade unionist's mind.

It is the author's conviction that the organized labor movement is a mixture of high ideals and practical opportunism, and that it is doing a real service for all labor. He strongly believes that the movement is misunderstood, not fundamentally wrong. He stresses the fact that the trade union is here to stay and that it is therefore necessary for every employer to understand its organization and to meet its demands intelligently.

The material is well balanced; the author has maintained a fair and open-minded point of view; many outside opinions are given on all sides of every controversial subject.

Hammond, J. L., and Barbara. THE RISE OF MODERN INDUSTRY. *New York: Harcourt, Brace and Company, 1926. 281 pp. $2.75.*

The Rise of Modern Industry is a history of early commercial developments leading to the capitalistic régime following the so-called "industrial revolution." The book begins with a description of the early Roman overseas commerce, traces the commercial changes from the Crusades to the discovery of America, and depicts the effect of the opening of the Atlantic Ocean on existing European industry. The book centers in England as that country gains in importance as a commercial centre. A tragic picture is drawn of the exploitation of the workers caused by the change to the factory system. The book closes with an effort to appraise the factors which have operated to produce the desire for material gain, a desire which dominates the present structure of society. The book is an interesting presentation not only of the socialistic theory of economic history but also of present economic conditions.

Hilgert, Joseph Robert. COST ACCOUNTING FOR SALES. *New York: The Ronald Press Company, 1926. 259 pp. $4.50.*

Although marketing costs often exceed the costs of manufacture, including raw materials, little attention has been paid in the great quantity of business literature on the subject of sales management to the accounting problems involved. Doctor Hilgert has presented a book in a field singularly devoid of material.

The author outlines the variety of trade channels through which goods pass on their way to the consumer. The principles of organization control are discussed. Dr. Hilgert's belief is that the "proper approach to the sales cost problem is the sales estimate or the sales quota," and it is necessary for "determining the policy of the company as a whole." It is on this thesis that the principles are developed.

The principles of budgetary control are explained, and a procedure is outlined for determining a budget. A method is illustrated to place the "profit-point" of sales, under which figure sales cannot be profitable and above which sales result in relatively increased return. Chapters are devoted to accounting control of branches and classification of expense. In allocating sales expense it is the author's belief that the apportionment should be by customers and territories rather than by lines. Three methods for such allocation are outlined. Various plans for paying salesmen are presented and a chapter is devoted to sales records and reports. A classification of selling expense for a branch office is exhibited and a method of distribution of this expense to salesmen is explained. The final chapter treats of the control of branches by means of flexible budgets.

The author has drawn freely upon the vast store of sales management literature available. Although the book appears to be directed to accountants, its greatest appeal and service will be to sales executives, who will find that it contains interesting and helpful material. The author's contact with sales organizations throughout the country makes a particularly broad background for a work of this type. The book is distinctly a pioneer in its field and is excellently presented, although it does little more than define the great scope of the problems involved.

Huntington, Ellsworth, and Williams, Frank E. BUSINESS GEOGRAPHY. *New York: John Wiley and Sons, Incorporated, 1926. 616 pp. $3.50.*

The second edition of *Business Geography* includes in its revision an enlargement of Part I by the expansion of the chapter on "World's Great Products and Climatic Optima," by the addition of a new chapter on the "Combined Effect of Soil and Relief," and by a re-arrangement of materials.

Part I treats of geographical factors and principles, Part II discusses these principles in relation to the "great products" and the "typical communities" of the world, Part III describes the industry of the United States and Canada, and Part IV relates to the business of the continents. Part V presents a wide variety of business statistics.

This edition is 134 pages larger than the previous one. Many new maps have been inserted, and more space has been devoted to a discussion of animal industries and agricultural crops. The value of this book for college and business school classes has been increased by its revision.

Ise, John. THE UNITED STATES OIL POLICY. *New Haven: Yale University Press, 1926. 547 pp. $7.50.*

Dr. Ise has drawn extensively on the available sources of material and has produced an interesting and well-documented account of the oil policy and the oil history of the United States.

The outstanding facts of the oil history of this country have been the great waste of oil arising out of poor production methods, the competitive organization of the industry, and the consumption of oil for unimportant uses. Problems of monopoly have been ably handled in two chapters. The latter half of the book contains an account of Federal and some of the state legislation affecting the oil industry. The Placer Law, withdrawal of public lands, the Leasing Law, and the Teapot Dome scandal are presented with careful detail. The chapter on "The Question of Foreign Supplies of Oil" is well worth reading because of its relation to the government attitude toward our oil companies in foreign trade.

The author believes that the history of the United States oil policy is a strong indictment of private ownership of oil deposits. He favors government ownership of oil deposits with leasing to private parties. While he recognizes the impossibility of this solution at this late date, he advocates the closing of what lands remain in government hands until such time as private lands have been exhausted. If necessary, these private land reserves should be protected by the purchase of adjacent property.

Whether or not one agrees with the author's conclusions, he will find the book useful,

for the material is presented in such a manner that independent opinions may be formed. The book is valuable because it stimulates consideration of the broad aspects of public policy.

Kuznets, Simon S. CYCLICAL FLUCTUATIONS. *New York: Greenberg, Publisher, Incorporated, 1926. 201 pp. $3.*

Dr. Kuznets makes a comprehensive statistical analysis of the two post-war business cycles in the retail and wholesale trades. The data used are those which have been gathered by the Federal Reserve Board since 1919 concerning the volume of wholesale and retail sales.

For each line of business where data are available, cyclical fluctuations in retail sales, wholesale sales, and manufacturing output are compared. The cycle movements in one line of distributive business are compared with those in another. In general, sales of retailers fluctuate least, those of wholesalers more, and those of manufacturers still more; that is, the violence of cyclical fluctuations increases with the distance from the consumer.

In the latter part of the book the author brings forward reasons to account for the difference in the magnitude of the cyclical movements in the sales of retailers, wholesalers, and manufacturers. An expected change in volume of sales or in prices will affect wholesalers and manufacturers to a greater degree than retailers. The reasoning here is, for the most part, hypothetical.

The author is hardly justified in using such refined statistical methods to analyze this short series of data extending back only to 1919. As Dr. Kuznets states, the conclusions reached can only be tentative until a longer series of data is available. The many figures, tables, and charts contained in the text make smooth reading difficult. A considerable amount of this numerical material might well have been put in footnotes and appendices.

This study is a commendable step into a new field, and contains a great deal of material which is of value to students of the business cycle and to those concerned with the wholesale, retail, and manufacturing trades. The text of the book is written in non-technical language and does not require any special knowledge of statistics or mathematics on the part of the reader.

Labat, Jean J. FRENCH IN COMMERCE. *Chicago: A. W. Shaw Company, 1925. 241 pp. $3.50.*

This book acceptably fills the need for a specialized text-book in French applied to business phraseology and usages. The work presupposes a knowledge of the fundamentals of French grammar, which is reviewed during the course of the lessons. The contents include a series of 30 lessons well adapted for purposes of the classroom, readings in French commerce, and a vocabulary which emphasizes business terms. Stressing as it does the development of such a vocabulary and the writing of correct commercial letters, the volume is particularly useful. Information about French commercial cities and business customs is woven into the exercises.

While the text is not adapted to a beginner in French, it should prove of value to those engaged in foreign trade who are desirous of becoming more familiar with the technical details of French business terminology.

Lewisohn, Sam A. THE NEW LEADERSHIP IN INDUSTRY. *New York: E. P. Dutton Company, 1926. 234 pp. $2.*

Mr. Lewisohn, in this book, approaches the labor problem in a rather new way. In the first few chapters he shows that management, rather than labor, is chiefly to blame for the present industrial unrest, and that the main fault of management has been one of neglect of labor problems. Executives have tended to regard the question of industrial relations as a minor matter. It is pointed out that the key to the situation is to be found in the local production managers, who act as buffers between capital and labor. Proper education of these executives in matters of labor relations would be a long step towards betterment of conditions.

Subsequent chapters are devoted to such matters as employee representation, labor unions, and wage policies. The usual advantages and disadvantages of employee representation and labor unions are discussed. The author urges cooperation of employers with trade unions in those industries in which unions are well established and show evidence of constructive possibilities. Wage policies are discussed from a broad, economic point of view.

Finally, Mr. Lewisohn in a brief way dis-

cusses "what the worker wants." The worker wants justice, status, and wants to have his job made a career. These desires of labor can be best met by giving more attention to personnel problems in the future.

On the whole, the book is worth while. No matters are treated in great detail, but new points of view are presented throughout. This book should be of interest to factory executives and to students of social problems.

Metcalf, Henry C. (Editor). SCIENTIFIC FOUNDATIONS OF BUSINESS ADMINISTRATION. *Baltimore: The Williams and Wilkins Company, 1926. 341 pp. $5.*

Dr. Metcalf has successfully edited an interesting symposium of lectures that analyzes the foundations of business administration.

Dr. Overstreet, as a philosopher, suggests a finer purpose in business. Dr. Caldwell, as a biologist, points out the progress towards a new interpretation of human relations in business. Dr. Carver, the economist, develops the economic firmness of the capitalist system and enlarges upon those developments necessary to meet the exactions of economic law. Miss Follet, as the psychologist, capably traces the requisite mental growth of the business man who is to carry out effectively his real purpose within the complex set of human relations. Dr. Person develops the modern concept of management and administration from an engineering point of view. Mr. Dennison, the business man, unites all five scientific aproaches by evaluating them in the light of his practical experience.

The underlying purpose of the book is found in the last two chapters. Here Dr. Overstreet sets forth the thesis that business is developing out of the old-time theory of bargaining, in which money-getting is hedged in by self-interest, into the newer idea of professionalism, in which money-getting becomes secondary to pride in accomplishment.

The several points of view are intelligently set forth without the sentimentalism that usually accompanies such a discussion.

Moulton, Harold G., and Pasvolsky, Leo. WORLD WAR DEBT SETTLEMENT. *New York: The Macmillan Company, 1926. 448 pp. $2.*

With the vast number of pages devoted to the debt situation arising from the World War, it is indeed refreshing to find a treatment as concise and yet as authoritative as the one accorded the subject in this short volume. The book covers both reparation debts and debts originating in inter-allied borrowings. It is, in the main, expository, setting forth the exact debt situation of each nation and pointing out that to pay a foreign debt a nation must have, in the long run, a budget which shows a sufficient balance to meet the payment and a favorable balance of trade large enough to allow the payment to be moved from the country.

The authors, by way of interpreting the material, point out that the American attitude has undergone some change from its initial contention that the money was owed and, therefore, simply must be repaid. America, they show, is more and more coming to recognize the underlying principles in the situation, and thus to realize that repayment is directly related to the borrower's ability to pay. In closing, the authors point out that the World War debts are by no means settled and, without going into detail, indicate the issues which in their opinion will have to be met in the near future.

The appendices of the book contain all the important documents relating to the war debt settlements.

The outstanding feature of the book is its total freedom from bias.

Newlove, George Hillis. CONSOLIDATED BALANCE SHEETS. *New York: The Ronald Press Company, 1926. 309 pp. $6.*

Forty-one rules for analysis and procedure under differing sets of conditions in the preparation of consolidated accounts are set forth in this book. There are two solutions to most of the illustrative cases. In one set of solutions, it is assumed that the investment in the subsidiary is carried in the investment account of the holding company at cost; in the other set of solutions, it is assumed that the holding company carries the investment at cost and has taken up in its investment and income accounts its share of any gains or losses of the subsidiary subsequent to purchase.

The twenty chapters of the book deal with the ordinary problems of consolidated statements and with more complex matters, such as varied types of control by the major holding company, no-par-stock eliminations, han-

dling of treasury stocks and bonds, and mutual stockholdings. The mathematics of simultaneous equations, involved in the computation of true earnings in the case of mutual stockholdings, is explained and illustrated.

This book will prove useful to students and accountants generally. It was designed as a manual on consolidated statements; it presents some new material, and it will be convenient to use.

Schell, Erwin Haskell. THE TECHNIQUE OF EXECUTIVE CONTROL. *New York: McGraw-Hill Book Company, Incorporated, 1926. 143 pp. $1.75.*

This book is offered as "a constructive analysis of executive control." It concerns itself principally with the problem of an executive in his relations with subordinates, associates, and superiors.

The author calls personal characteristics executive tools, and classifies them as tools which stimulate, stabilize, conform, restrain, save time, and fashion loyalty.

The text is replete with questions which illustrate application of these characteristics to actual problems. Additional opportunities for formulating precise personal opinions are provided by dissenting comments written at the close of each chapter. No effort has been made to furnish arbitrary principles and standards. The author seeks to build up an executive method best suited to the capacities of each personality.

The book is interesting and unique in its field. It is written with sound common sense and is valuable to those in business who wish to maintain cordial relations with fellow workers.

Secrist, Horace. THE WIDENING RETAIL MARKET. *Chicago: A. W. Shaw Company, 1926. 186 pp. $3.*

That modern methods of distribution and communication have broadened the retail market is now widely accepted. That for many products the United States is being welded into a single vast retail market through competition brought about indirectly by advertising, uniform habits of buyers, and overlapping trade areas, is an interesting thesis which has been advanced and is tenable; it merits research and serious attention. Professor Secrist ably presents the case for this new market concept in the first pages of this book, applying his arguments to the field of men's clothing and furnishings. While his factual material is confined to men's clothing, Professor Secrist believes his arguments have wider application.

Much the greatest portion of this book is occupied with the presentation of the data on which his conclusions are based. This proves disappointing for, despite painstaking statistical analysis, the evidence presented is too tenuous and of too narrow an interest to convince the skeptical reader. To accept Dr. Secrist's conclusion is possible only to those predisposed toward his case. A questionnaire answered by 2,401 college men regarding the buying habits of their fathers and themselves, while living at home, in purchasing suits, overcoats, and furnishings provides the basis for the volume. It is demonstrated that large numbers of both groups are accustomed to buy clothes, particularly suits and overcoats, in cities other than their own and usually of larger size. A tendency exists toward inter-trade-area buying; but how important this is, is not demonstrated by quantitative measure, although it is the foundation for one of Dr. Secrist's main premises. It would be interesting to know how great a change the habits of present-day college students in buying clothes represent over those of the previous generation. It would seem, moreover, that college students and their fathers represent rather a fastidious stratum in the men's clothing market, and hardly constitute a fair sample. This selection tends to qualify the value of any general conclusions which might be drawn from such data.

Now that Dr. Secrist has driven the entering wedge, it is to be hoped that further research will be conducted to determine how wide the market is in other fields. To know how widely a condition of a nation-wide retail market with indirect "transmitted competition" obtains is fully as important as to know that it does exist in isolated cases.

Snow, A. J. PSYCHOLOGY IN BUSINESS RELATIONS. *Chicago: A. W. Shaw Company, 1925. 562 pp. $6.*

In this volume the author brings together much of the work that has been done in the application of psychology to business. While consideration is confined principally to the various phases of marketing, there is included

much that should be useful to those whose interest is not primarily in this field.

Beginning with a brief presentation of the fundamental principles of psychology, the author presents an analysis of the consumer and of the factors influencing demand, an analysis which is intended to serve as a basis for the treatment of subsequent topics. In the discussion of psychology in marketing, advertising, and selling, the theoretical concepts are amply illustrated with clearly presented examples. Probably these examples will prove of more benefit to the reader than will the psychological analysis itself, which is sometimes difficult to understand.

Experimental psychology has been developed to only a comparatively small extent, and for this reason its application to business is limited. Despite this limitation, the great mass of practical material given, most of it based upon psychological knowledge, demonstrates the usefulness of the science.

The wide scope of the topic prevents the author from going into technical details in more than a few instances; therefore the book should be of use to the general business executive. It is perhaps unfortunate that consideration of industrial psychology was excluded.

Walling, William English. AMERICAN LABOR AND AMERICAN DEMOCRACY. *New York: Harper and Brothers, 1926. 184 pp. $2.50.*

Mr. Walling has had personal contact with such leaders of organized labor as Samuel Gompers and has worked with organized labor both in organizations in the United States and in the International Federation of Trade Unions. This basis of experience is of great value to him in this book, which sets forth the principal aims, both political and economic, and the philosophy of trade unionism in the United States. More especially, it presents the aims and policies of the American Federation of Labor.

The author has organized his work into two sections which, taken together, present the aspirations of American labor for American democracy. The first section, called "Labor and Politics," considers the political program of American labor as outlined in conventions and in pronouncements of officials of the American Federation. The fundamental political policy of the American Federation, that of non-partisanship (or bi-partisanship, if looked at in another way), is defined; history, especially since 1899, is cited to show that the non-partisan policy has been adhered to generally and that, on the whole, it has been successful. The Farmer-Labor-Progressive bloc in Congress is defined as a part of that policy because of the necessity for the passage of labor's progressive program.

The second section, "Labor and Government," deals principally with the philosophy and economic aims of that progressive program. Labor's attitude toward capital, and toward such proposals as employee ownership, employee representation, and profit-sharing, is forcefully presented. Thereafter follows a discussion of the attitude of labor toward profits, which is a position between the capitalistic *laissez-faire* idea and the Socialistic no-profit conception. Labor's demand for "a voice in industry" is discussed, as well as its ideas on the relationship of government and industry. Mr. Walling, after showing that labor does not want governmental operation in industry, finally presents the ultimate aim of organized labor: a change from the present type of society to one more democratic and more useful to the members of that society.

The book is frankly written from the point of view of organized labor and not from an impartial, critical attitude. Hence there are places throughout with which supporters of the present system will disagree, sometimes violently. The author has tried to avoid personal opinions as much as possible by attempting to document most of his points. The major part of his evidence has come from speeches of union leaders, articles in the labor organ, and from convention resolutions and pronouncements. If these ideas can be accepted as true representations of the thoughts and aims of organized labor, the case for labor is well presented.

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ANGELL, JAMES W. *The Theory of International Prices.* Cambridge: Harvard University Press, 1926. 571 pp. $5.

ARNOLD, HENRY H. *Airmen and Aircraft.* New York: The Ronald Press Company, 1926. 216 pp. $3.50.

ASHLEY, PERCY. *Modern Tariff History* (Third Edition). New York: E. P. Dutton & Company, 1926. 365 pp. $5.

ASPLEY, J. C. *Managing the Interview.* Chicago: The Dartnell Corporation, 1925. 118 pp. $1.10.

ATWOOD, ALBERT W. *The Mind of the Millionaire.* New York: Harper and Brothers, 1926. 263 pp. $2.50.

BECKMAN, THEODORE N. *Wholesaling.* New York: The Ronald Press Company, 1926. 606 pp. $6.

BENTON, ALVA H. *Marketing of Farm Products.* Chicago: A. W. Shaw Company, 1926. 427 pp. $5.

BINGHAM, WALTER VAN DYKE, AND FREYD, MAX. *Procedures in Employment Psychology.* Chicago: A. W. Shaw Company, 1926. 269 pp. $5.

BLODGETT, HARVEY A. *Financial Independence; How to Win It.* New York: D. Appleton & Company, 1926. 222 pp. $1.50.

BREWSTER, ARTHUR JUDSON. *An Introduction to Retail Advertising.* Chicago: A. W. Shaw Company, 1926. 319 pp. $5.

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